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*Archives of*  
**PHYSICAL MEDICINE**

*Official Journal American Congress of Physical Medicine*  
(Formerly Archives of Physical Therapy)



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**29th Annual Session**  
**AMERICAN CONGRESS OF PHYSICAL MEDICINE**

September 4, 5, 6, 7, 8, 1951

SHIRLEY-SAVOY HOTEL

DENVER, COLORADO

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VOLUME XXXII

JULY, 1951

NO. 7

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# **American Congress of Physical Medicine**

**29th Annual**

## **Scientific and Clinical Session**

**and**

**Instruction Seminar**

**September 4, 5, 6, 7 and 8, 1951**



**Official Headquarters**

**SHIRLEY-SAVOY HOTEL**

**Denver, Colorado**

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**EXECUTIVE OFFICES**

**30 NORTH MICHIGAN AVENUE**

**CHICAGO 2, ILLINOIS**



# INSTRUCTION SEMINAR

In Conjunction with the

## 29th Annual Scientific and Clinical Session AMERICAN CONGRESS OF PHYSICAL MEDICINE

September 4, 5, 6 and 7, 1951

SHIRLEY-SAVOY HOTEL

DENVER, COLORADO

### SCHEDULE

Physicians and registered physical and occupational therapists may enroll for either series

TUESDAY MORNING — SEPTEMBER 4		TUESDAY MORNING — SEPTEMBER 4	
(A) 10:00-10:50 A.M. Electromyograph, Basic Principles (with demonstration)	(B) 11:00-11:50 A.M. Electromyography Clinical Aspects	(1) 10:00-10:50 A.M. Scoliosis: Causes, Prognosis, Physical Treatment	(2) 11:00-11:50 A.M. Hemiplegia Physical Rehabilitation
Golseth	Golseth	Risser	Deaver
TUESDAY AFTERNOON — SEPTEMBER 4		TUESDAY AFTERNOON — SEPTEMBER 4	
(C) 3:00-3:50 P.M. Functional Anatomy Spine and Trunk	(D) 4:00-4:50 P.M. Functional Anatomy Spine and Trunk	(3) 1:30-2:20 P.M. Low Back Pain with Reference to Manipulation	(4) 2:30-3:20 P.M. Post Reduction Treatment of Fractures
Quiring	Quiring	Wright	E. Krusen, Jr.
WEDNESDAY MORNING — SEPTEMBER 5		WEDNESDAY MORNING — SEPTEMBER 5	
(E) 8:30-9:20 A.M. Deconditioning in the Invalid and the Aged	(F) 9:30-10:20 A.M. Deconditioning in the Invalid and the Aged	(5) 8:30-9:20 A.M. Crutch Walking with Demonstration	(6) 9:30-10:20 A.M. Physical Treatment of Peripheral Nerve Lesions
Taylor	Taylor	Deaver	Kuitert
THURSDAY MORNING — SEPTEMBER 6		THURSDAY MORNING — SEPTEMBER 6	
(G) 8:30-9:20 A.M. Electrical Stimulation — Types of Current and Clinical Physiology	(H) 9:30-10:20 A.M. Electrical Stimulation — Types of Current and Clinical Physiology	(7) 8:30-9:20 A.M. Treatment of Severely Disabled Rheumatoid Arthritics by Hormonal, Orthopedic and Re- habilitation Procedures	(8) 9:30-10:20 A.M. Essentials of Muscle Testing (with demonstration)
Kubicek	Kubicek	Bickel	Knapp
FRIDAY MORNING — SEPTEMBER 7		FRIDAY MORNING — SEPTEMBER 7	
(J) 8:30-9:20 A.M. Technique of Scientific Medical Writing	(K) 9:30-10:20 A.M. Technique of Scientific Medical Writing	(9) 8:30-9:20 A.M. Essentials of Muscle Reeducation (with demonstration)	(10) 9:30-10:20 A.M. Occupational Therapy: Prescription Writing
Hammond	Hammond	Kendell	Mead

*Note: The Committee on Education of the American Congress of Physical Medicine is in charge of the instruction seminar. It is purposely planned to limit the subjects in any year to a few topics in order to devote enough time to those subjects to give those attending a good review, both from the standpoint of basic knowledge and from the clinical standpoint. Certain groups of these subjects will be repeated every three to five years.*

Courses will be offered in two separate groups: One group of ten courses will be offered on basic subjects. A second group of ten courses will present more general and clinical subjects. Physicians and therapists may register for letter or numbered series. Only those therapists registered with the American Registry of Physical Therapists or the American Occupational Therapy Association will be permitted to enroll for the instruction courses. The charge for a single lecture is \$2.00, for a full schedule of ten lectures, \$15.00.

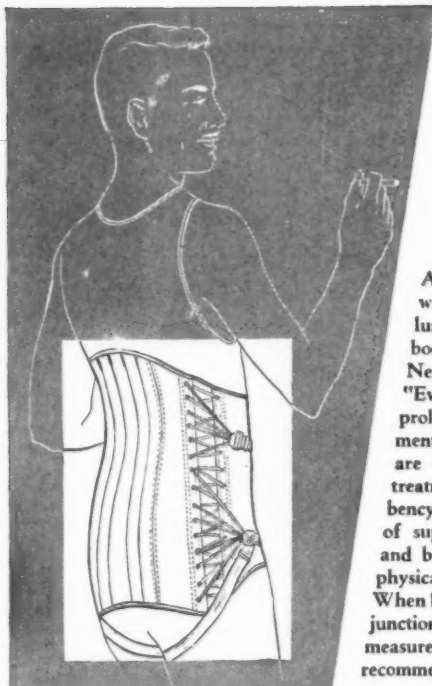
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An Orthopedic Surgeon\* in writing on the treatment of lumbosacral disorders in his book *Backache and Sciatic Neuritis* states as follows:—  
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*\*Philip Lewin, M.D., F.A.C.S.*

*Backache and Sciatic Neuritis,*

*Chapter XXXIX, Page 580*

*Published 1943 by Lea & Febiger, Philadelphia*

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# Contents—July, 1951

Volume XXXII

No. 7

## ARCHIVES OF PHYSICAL MEDICINE

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Original contributions, exchanges and books for review should be forwarded to the Editorial Office. All business matters including advertising should be handled through the Executive Office, 30 N. Michigan Ave., Chicago 2, Illinois. The statements in the manuscripts published in the ARCHIVES OF PHYSICAL MEDICINE are made solely on the responsibility of the author. The American Congress of Physical Medicine does not assume any responsibility for statements contained therein. Manuscripts accepted for publication in ARCHIVES OF PHYSICAL MEDICINE are for exclusive publication and may not be published elsewhere.

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### EDITOR OF THE MONTH

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Cleveland, Ohio



# 29th Annual Session American Congress of Physical Medicine

September 4-8, 1951  
DENVER, COLORADO

Hotel	Single Room	Double (Double Bed)	Double (Twin Beds)	Connecting Rooms Bath Between 3-4 People	Multiple Occupancy Rooms 3-4 People
Adams .....	\$3.50-\$4.00	\$ 6.00	\$ 5.00-\$ 7.50	\$10.00 up	\$ 6.00-\$ 8.00
Albany .....	3.00- 6.00	6.00-\$ 9.00	6.00- 9.00	10.00 up	
Argonaut .....	4.50- 5.00	7.00- 7.50	7.50	12.50-\$14.00	10.00
Auditorium .....	3.50- 4.00	4.00- 6.00	6.00	8.00- 12.00	6.00- 8.00
*Brown Palace .....	6.00- 9.00	10.00- 12.00	10.00- 18.00	13.00- 18.00	
Cory .....	3.00- 5.00	5.00- 7.00	5.00- 8.00		
*Cosmopolitan .....	5.00- 7.00	7.50- 10.00	8.50- 10.00		13.00
Kenmark .....	3.50- 4.00	5.00- 6.00	6.00- 7.00	9.00- 12.00	
Mayflower .....	5.00	5.00- 6.00	7.00	10.00 up	
Olin .....			7.00- 8.00		
Oxford .....	5.00	5.50- 8.00	7.00- 8.00	12.00 up	
Park Lane .....	5.00- 8.00		8.00- 12.00		
Sears .....	4.50	5.50	7.00	9.00- 10.00	7.50- 8.00
*Shirley-Savoy .....	3.50- 4.50	3.50- 4.50	5.00- 7.00	8.00- 12.00	
(headquarters)					
Standish .....	3.50- 4.50	4.00- 5.00	5.00- 6.00	8.00	6.00- 7.50
Wellington .....	5.00	5.00- 5.50	6.00- 7.00	10.00	

\* These 3 hotels located in triangular position but one block from each other; also, parlor suites available here.

NOTE: Single rooms are limited in number, hence it is advisable to arrange to share twin bedrooms where possible. Please designate if willing to share: YES ☐ NO ☐. You will receive a confirmation directly from hotel accepting the reservation.

MOTOR COURTS: Luxurious accommodations are available in new modern motor courts located in Denver and suburbs. If you are driving we recommend this type of accommodation. List names of those in your party, and we will assign accordingly.

MOUNTAIN ACCOMMODATIONS: If you have a few days before or after the convention that you would like to enjoy in the mountains, we will be happy to send you information on resorts, dude ranches, sightseeing trips, etc.

## Hotel Reservation Application

Mail to: Housing Chairman  
American Congress of Physical Medicine  
225 West Colfax Avenue  
Denver 2, Colorado

Please reserve.....room(s) for.....person(s). Single..... Double..... Bed..... Rooms..... Type.....  
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of the American Medical Association**

Name and Location of School	Medical Director and Technical Director	Entrance Requirements <sup>1</sup>	Duration of Course	Classes Begin	Maxi. Enrollment	Tuition	Certificate, Diploma, Degree
(Address all inquiries to the Office of the Surgeon General, Department of the Army, Washington 25, D. C.)							
Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas	J. E. Tate, Lt. Col., M. C.	b-e	44 wks.	Oct	20	None	Certificate
Fitzsimons Army Hospital, Denver	A. J. H. Lusk, Col., M. C.	Affiliated with Medical Field Service School					
Walter Reed Army Hospital, Washington, D. C.	Olena M. Cole, Maj., WMSC	Affiliated with Medical Field Service School					
Northeast							
Childrens Hospital, Los Angeles*	J. H. Kuntz, Lt. Col., M. C.						
College of Medical Evangelists, Los Angeles*	Irwin H. Kuehthau, Maj., WMSC						
University of Southern California, Los Angeles*	S. S. Matthews, M.D.	a-b-d	14 mos.	Sept	14	\$300	Cert. or Degree
University of California School of Medicine, San Francisco*	Sarah S. Rogers	a-b	15 mos.	Sept	16	\$300	Cert. or Degree
Stanford University, Stanford University, Calif.*	F. B. Moor, M.D.	a-b	14 mos.	Sept	16	Univer.	Certificate
University of Colorado Medical Center, Denver*	R. Wm. Berdan, M.D.	a-b	12 mos.	Feb	16	\$2500	Cert. or Degree
Northwestern University Medical School, Chicago	Charles W. Berdan, M.D.	a-b	12 mos.	Sept	16	\$600	Certificate
State University of Iowa College of Medicine, Iowa City*	Lucile Essing, M.D.	a-b	12 mos.	Sept	12	\$2500	Cert. or Degree
State University of Kansas Medical Center, Kansas City, Kan.*	Margery L. Wagner	a-b	12 mos.	Sept	12	\$450	Certificate
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St. Louis University, Division of Health and Hospital Services, St. Louis	Harold Dinkels, M.D.	a-b	12 mos.	Sept	20	\$400	Certificate
Wabash University School of Medicine, St. Louis*	Mary Lawrence	a-b	12 mos.	Sept	3	\$400	Certificate
Columbia University College of Physicians and Surgeons, New York City*	E. D. W. Hauger, M.D.	a-b	4 yrs.	Feb/Sept	3	\$400	Diploma
New York University School of Education, New York City*	Wm. C. Farr	a-b	4 yrs.	Sept	24	College	Cert. or Degree
Duke University, Durham, N. C.*	D. L. Rose, M.D.	a-b	4 yrs.	Sept	30	Univer.	Cert. or Degree
Cleveland Clinic Hospital, Cleveland*	Ruth G. Monteith	a-b	4 yrs.	Sept	16	\$500	Dipl. & Degree
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Duke University	H. D. Bouman, M.D.	a-b	2 yrs.	Oct	12	\$200	Diploma

with science courses; e = Four years of college with science courses; f = High school graduation.  
 g. Nonresidents charged additional fee.  
 \* Male as well as female students admitted.



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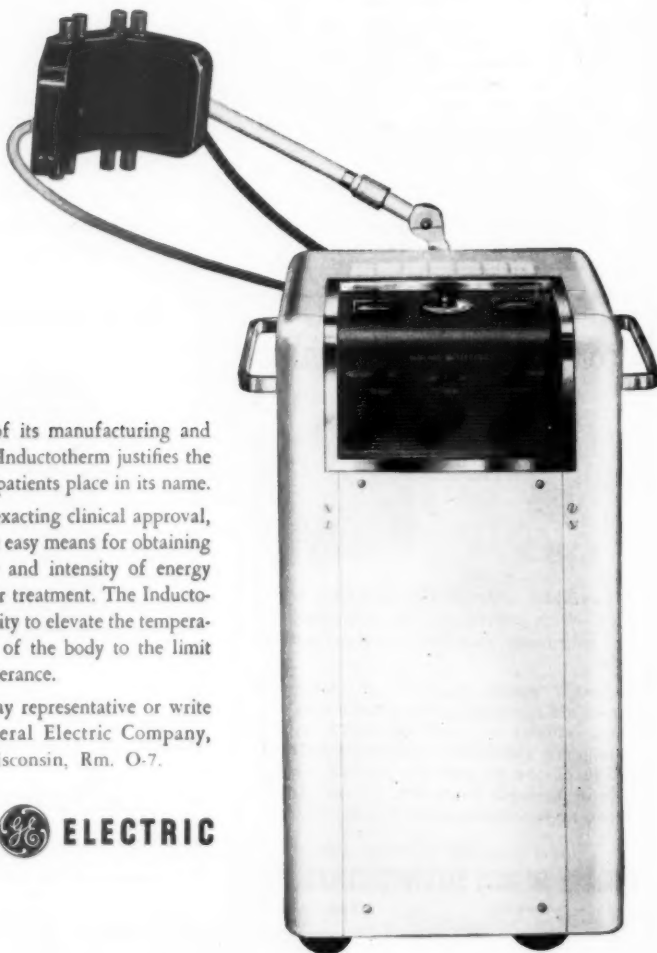


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## EFFECT OF MAINTAINED CONTRACTURE ON PHYSIOLOGICAL PROPERTIES OF MUSCLE \*

ERNST FISCHER, M.D.

and

HELEN V. SKOWLUND, M.S.

RICHMOND, VA.

The word "contracture" as used in this paper is convenient in its vagueness for the designation of various states of muscle shortening or tightness, all of which have in common that their underlying mechanisms, although themselves not understood in all details, are different from normal reflex or voluntary tetanic contraction. This definition includes states of muscle shortening associated with electrical potentials as well as electrically silent ones. We will discuss here mainly three different types of experimental contractures: the contracture following tenotomy,<sup>1</sup> that following experimental arthritis (synovial silver nitrate injection)<sup>2</sup> and the contracture caused by local tetanus-toxin injection.<sup>3</sup> These contractures have in common that their first stage is of neurogenic origin and, therefore, reversible if the specific cause is removed. However, this first-stage, if maintained for some time, is transformed slowly into a more permanent contracture electrically silent and not easily reversible, called sometimes "myostatic contracture."<sup>4</sup> Distinct atrophy of the muscles occurs in all these conditions except in local toxin tetanus, in which for some time the wasting of the muscle fibers is masked, as will be shown later, by considerable extracellular, and probably also by some intracellular, edema.

Since these contractures occur in atrophying muscles, any comparison of physiological properties has to take into account that the wasting of the muscle as a whole is due only to a diminution of the volume of the individual muscle fibers, while the various elements forming the interstitial tissue are not affected. In consequence, the relative volume of the "muscle phase," that is the ratio between the volume of all muscle cells and the volume of the whole muscle, declines progressively during atrophy. For normal muscles, the volume of the muscle phase can be calculated from chloride determinations, since chloride is present under normal conditions only in the extracellular phase.<sup>5</sup> In atrophying muscles, the change in relative muscle phase can be calculated either from the weight loss<sup>6</sup> or from the relative increase in col-

\* From the Department of Physiology, Medical College of Virginia. This project of the Baruch Center of Physical Medicine and Rehabilitation was performed partly under contract between the Office of Naval Research and the Medical College of Virginia. Dr. P. F. Sahyoun, Department of Surgical Pathology, advised us in the histological studies and made the facilities of his department available.

<sup>1</sup> Read at the Twenty-Eighth Annual Session of the American Congress of Physical Medicine, Boston, Aug. 29, 1930.

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5. Manery, J. F., and Hastings, A. B.: The Distribution of Electrolytes in Mammalian Tissues, *J. Biol. Chem.* **127**:657, 1929.

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lagen.<sup>7</sup> Both methods, despite some inherent errors, give, as a rule, comparable results. In true disuse atrophy (cast) of rabbit muscles, calculations of the volume of interstitial tissue from chloride analyses check satisfactorily with determinations from weight loss and collagen increase.<sup>8</sup> However, in late stages of denervation atrophy, interstitial phases calculated from the chloride content of the muscles are considerably higher than those calculated from weight loss and collagen increase.<sup>9</sup> Furthermore, the amount of sodium found in these muscles is not large enough to satisfy the theoretical need of the total chloride, if all of it is in the extracellular space. Apparently, some chloride has entered the muscle phase, probably replacing some protein in the cat-anion balance inside the muscle fibers.

Studying the electrolyte changes during these various contractures, we observed a similar chloride shift. Of the three conditions investigated, tetanomy produces the strongest contracture, while in arthritis probably only

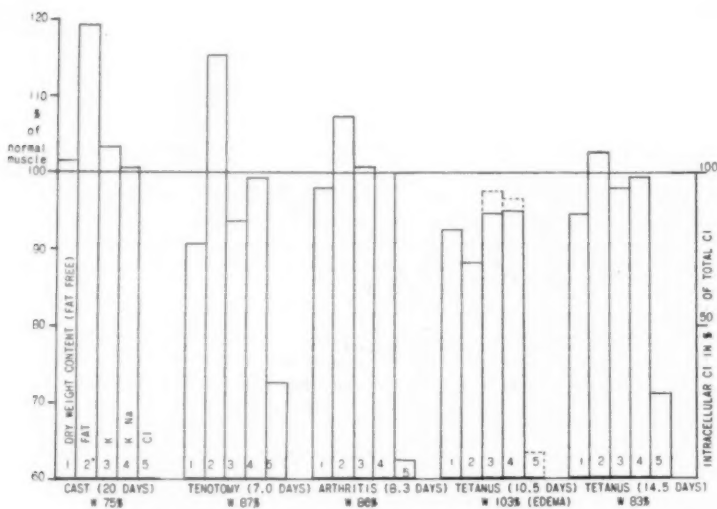


Fig. 1. — Comparison of disuse atrophy (20 days, 25% weight loss) with tetanomy contracture (7.0 days, 13% weight loss), arthritic contracture (8.3 days, 14% weight loss), tetanus contracture with edema (10.5 days) and tetanus contracture with atrophy (14.5 days, 17% weight loss). All values, except chloride (Cl), are expressed in per cent of the corresponding values for the normal control muscles. Fat free dry weight and fat measured as per cent of wet weight, and potassium (K) and sodium (Na) as mEq/kg. of true muscle phase. Chloride found in true muscle phase of experimental muscle expressed as per cent of its total chloride content.

parts of the whole muscle are in a state of contracture. In fig. 1, the small changes observed even in advanced disuse atrophy (20 days) are compared with those after tetanomy (7.0 days), arthritis (8.3 days) and tetanus injection (10.5 and 14.5 days). In disuse atrophy, the most significant changes are a small increase of intracellular potassium compensated by a corresponding decrease in sodium, which is probably caused by the inactivity of the

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fibers.<sup>10</sup> The increase in fat content, as an extracellular element, corresponds to the weight loss. Fat free dry substance is considerably decreased for tenotomy and late tetanus contracture. The fact that in early tetanus dry substance is more decreased than in late tetanus and that fat content is below normal value confirms the conclusion drawn from the extremely high chloride and sodium values and low collagen content of the whole muscle that considerable edema must be present. This edema is apparently not only extracellular but also intracellular. While for all other conditions, combined potassium and sodium concentration in the muscle phase remains unaltered, that for early tetanus is distinctly diminished. In tenotomy and late tetanus contracture, intracellular potassium is diminished and is more or less replaced by sodium. Chloride does not enter the muscle phase in disuse atrophy, but a considerable part of the total chloride is inside the muscle fibers in tenotomy and in late tetanus. For early tetanus, an exact calculation of intracellular chloride is impossible because of the edema present. It is important, however, that even if the extracellular phase is calculated from chloride values, the potassium and the combined potassium and sodium concentrations of the intracellular phase remain distinctly below normal values, confirming the assumption of intracellular edema. The small amount of chloride found inside the muscle fibers in experimental arthritis is probably due to the fact that, as will be shown later by histological studies, contracture is restricted to a number of small foci in the muscle.

The decrease in muscle force per gram of muscle in tenotomy<sup>11</sup> and tetanus<sup>12, 4</sup> contracture has been well established by various authors. The delayed relaxation of muscle twitches observed by Ranson<sup>13</sup> in muscle with tetanus contracture but without weight loss can be explained by the edema present. If one calculates the muscle forces observed by the various investigators as strength per gram of muscle phase according to our data, the forces will be higher but the contractile capacity is, nevertheless, lower than for the normal control muscles. We investigated, therefore, the concentration in structural and enzymatic proteins in the muscle phase during these contractures.

Figure 2 shows the relative changes calculated per gram of muscle phase in advanced disuse atrophy, early tenotomy, tetanus with and without edema for non-collagenous protein, myogen and myosin as well as the changes in aldolase activity per milligram of myogen isolated. The decreases are relatively small for disuse atrophy and for tetanus with edema. One must keep in mind that for the last condition, despite the over-all increase in weight, the relative volume of the muscle phase is considerably diminished. The various protein concentrations, if calculated per gram of muscle, will have declined much more. The moderate changes in arthritis again indicate that contracture is restricted to small areas in the muscle, and that the changes observed are probably a consequence of disuse. That this experimental silver nitrate arthritis can be compared with human arthritis is manifested by similar decrease in total protein, myosin and adenosinetriphosphatase as reported in biopsy material from human rheumatoid arthritis.<sup>12</sup>

We subjected a large number of the muscles used in our investigation to histological examination. In atrophy of disuse all the fibers stain as well as normal fibers, but are of smaller diameter than those of the control mus-

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12. Bunim, J. S.; Sokoloff, L.; Bien, E. J.; Wilens, S. L.; Ziff, M., and McEwen, C.: Histologic and Chemical Changes in Skeletal Muscle of Patients with Rheumatic and Non-rheumatic Diseases, VII, *Int. Congr. Rheumatic Dis.*, N. Y. 1944, p. 72.



cles. In tenotomy contracture, we confirmed the observation of Davenport and Ranson,<sup>1b</sup> that the muscle fibers are not altered uniformly. Some fibers are more or less normal, while others stain poorly, have blurred cross-striation, and have a more pronounced longitudinal striation. In addition to these changes we found rather constantly a peculiar vacuolar degeneration (fig. 3), in all muscles in tenotomy contracture areas. The content of these

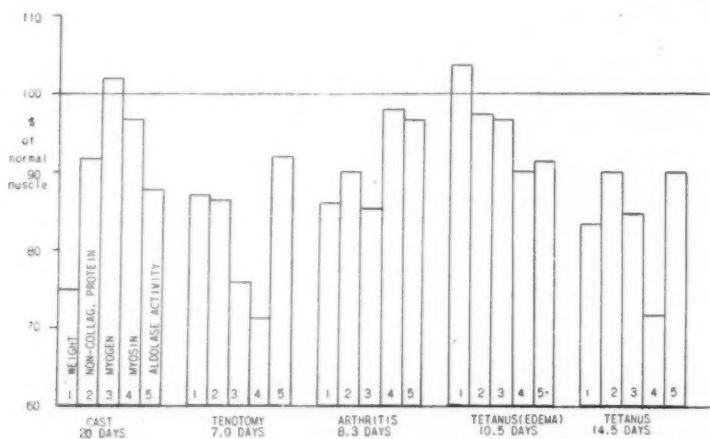


Fig. 2. — The same as figure 1. Noncollagenous protein, myogen and myosin measured as per cent content of true muscle phase. Aldolase activity measured as microgram of inorganic phosphate (P) liberated in 10 min. at 38 C. per mg. of myogen isolated.

vacuoles does not take any fat stain. In freshly teased fibers of tenotomized muscles, the content of these vacuoles seems to be fluid. It is highly probable that these vacuoles contain the intracellular chloride. Somewhat similar, but less extensive, vacuolar degeneration has been described by some investigators for late denervation atrophy.<sup>6, 12</sup>

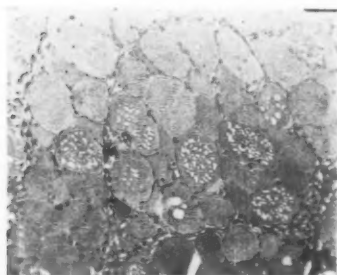


Fig. 3. — Cross section of muscles 8 days after tenotomy.

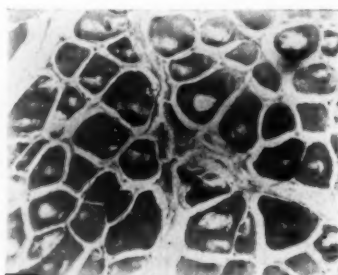


Fig. 4. — Cross section of muscle after 7 days of experimental arthritis.

In some of the arthritic muscles we found no histological changes beyond those typical for disuse atrophy of comparable degree. These were all muscles for which chloride determination did not indicate any significant chloride

12. Tower, S. S.: Atrophy and Degeneration in Skeletal Muscle, *Am. J. Anat.* 56:1, 1935.



shift into the muscle fibers. However, those muscles with relatively large gain in intracellular chloride, showed areas of several millimeters in diameter, in which the fibers are unevenly stained, and in which many fibers showed defects in substance starting more or less from the center of the fibers (fig. 4). In longitudinal sections of these areas we observed that some of the fibers are broken up into small segments and that a large number of fibers have a distinct longitudinal fissuring. These changes resemble to a certain extent the degenerative changes in human rheumatoid arthritis as observed by a few investigators.<sup>14</sup> However, in this experimental arthritis we never observed inflammatory nodules of the polymyositic type as described repeatedly in recent years for human rheumatoid arthritis.<sup>15</sup>

In tetanus contracture some of the fibers stain more or less normally, while others show a dissolution starting more from the periphery than from the center of the fibers. In longitudinal sections, blurring of cross-striation, irregular mottling of the stain and longitudinal fissuring could be seen in some areas as reported by others.<sup>4</sup>

Although the histological alterations in these three types of contracture are in no way uniform, they have one feature in common: a destruction of a part of the fiber content, unevenly distributed through the muscles. It is impossible to calculate exactly from histological slides the percentage of muscle fibers destroyed. However, our material shows a certain parallelism between decrease in specific proteins per gram of muscle phase (fig. 2) and the destruction of fibers seen histologically. It is possible that if the protein and enzyme concentrations could be calculated per gram of undestroyed muscle phase, values would be found comparable to those in disuse atrophy of comparable duration. Similarly, the observed decrease in potassium and the compensatory increase in sodium inside the fibers might be due to unaltered electrolyte concentration in the non-affected fibers, while in the destroyed parts of the fibers, the electrolyte composition would resemble, to some extent, that in the extracellular space. This would at least explain the presence of some chloride inside the fibers.

The histological findings partly explain why recovery from a "myostatic contracture" is absent or a slow process. Recovery means repair or regeneration of muscle fibers. The main question of why contracture of neurogenic origin enhances atrophy and finally leads to the destruction of fibers cannot be definitely answered. The excitation of the fibers as judged by their electrical potentials in tenotomy,<sup>16</sup> in arthritis<sup>16</sup> and in local tetanus<sup>16</sup> is rather weak as compared with the excitation occurring in spastic paralysis due to upper neuron lesions. The latter type of excitation does not enhance atrophy of disuse. On the contrary, if the flaccid paralysis changes into spastic paralysis after experimental upper neuron lesion, the muscles stop losing in volume and slowly regain their original strength and volume.<sup>17</sup>

Eccles<sup>18</sup> indicated that for tenotomy contracture the extreme shortening of the muscle fibers might be responsible for the quick deterioration of the

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18. Eccles, J. C.: Investigations on Muscle Atrophies Arising from Disuse and Tenotomy. *J. Physiol.* 103:253-266, 1944.



muscle and he refers to an observation of Ramsey and Street.<sup>19</sup> A single shortening of an isolated frog muscle fiber under 65% of normal length produces irreversible physiological and histological changes, called the "δ-state." For contracture following local tetanus injection, shortening of the muscle fibers to 52% of the initial length has been observed.<sup>4</sup> Since the contracture in arthritis is apparently restricted to small areas, no measurements of the amount of shortening have been reported. The possibility that in the affected areas the fibers shorten considerably cannot be excluded at present. A shortening to the "δ-state" might indeed be the common denominator in all contractures of neurogenic origin which slowly change into "myostatic contracture." Since the latter is practically irreversible, treatment of what we call in this paper "contracture" has to start in the early neurogenic phase before the muscle fibers have time to shorten to the "δ-state."

### Summary

The muscular contracture following tenotomy, that accompanying experimental arthritis, and that caused by tetanus toxin are discussed in respect to the various factors responsible for the severe deterioration of the contractile power. The latter is, in these conditions, much more pronounced than in pure disuse atrophy. The decrease in relative dry weight as well as in the concentration of structural and enzymatic proteins is much larger than the decrease in relative "true muscle phase" caused by the atrophy. The electrolyte changes inside the muscle phase are severer than in true disuse atrophy. Typical for myostatic contractures is a penetration of chloride into the muscle phase, which is normally chloride free. The histological alterations observed in these three types of contracture are not uniform in their details, but they all have in common an uneven distribution of the lesions through the whole muscle, while large parts of the muscle are of more or less normal appearance. Furthermore, all the lesions observed show a part of the fiber content in the affected areas replaced by a fluid. The possibility is discussed that the fibers thus destroyed are fibers which shortened beyond their physiological limit. Such a self-destruction of the fibers could probably be prevented by an early therapeutic correction of the conditions causing the contracture.

19. Ramsey, R. W., and Street, S. F.: The Isometric Length-tension Diagram of Isolated Skeletal Muscle Fibers of the Frog. *J. Cell. Comp. Physiol.* 15:11, 1919.





## COMMON DEFORMITIES IN CEREBRAL PALSY \*

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ATLANTA

Destruction or maldevelopment of certain areas of the brain allows release of nerve impulses to muscles, maintaining them in a constant state of contraction which may lead ultimately to fibrous contracture. The site of the lesion determines the type of pattern movements released, and they are many and varied; but each type of cerebral palsy has its own characteristic deformities, which are met in the majority of cases.

Spastics, because of destruction of extrapyramidal areas, commonly exhibit continuous contraction of antigravity muscles. Antagonists of these groups are weakened or brought into play only with reinforcement. Muscle imbalance is particularly striking in this type, and contractures form early and progress rapidly.

Athetoids, resulting from maldevelopment or destruction of the posture-suppressing basal ganglions, tend to assume bizarre positions by means of one muscle group or another. Because of constant movement, fixed deformity is not so frequent in this group, though it does occur if poor alignment is allowed to persist.

Deformities in the rigidities follow much the same pattern as in spastics and are likely to be severer. There is constant pull of both agonist and antagonist, with the stronger group determining the deformity.

Because of the laxity of ligamentous structures, ataxias only rarely present fixed malalignment; when it does occur it is secondary to long-continued faulty positioning.

Treatment of deformity in cerebral palsy, as in any orthopedic condition, is aimed at reestablishment of normal segmental alignment and functional position and is accomplished by means of strengthening, stretching, relaxation, bracing, and special equipment. The problem of controlling strength is confronted more frequently than that of supporting weakness in this group of syndromes.

In the feet the commonest deformity is valgus, both of heel and forefoot. This finding may be present in all types, and develops early (fig. 1). There is usually an inactive anterior tibial and a spastic or athetoid peroneal group. Treatment consists in application of well-fitting swung-in shoes with a long medial counter and medial heel-and-sole wedge. Activation and strengthening of the anterior tibial muscles may necessitate reinforcement by resistance to the hip flexors.

The varus foot is met less frequently and is more likely to occur in spastics and in persons with rigidities. Constant pull of the anterior tibial is present, with tightness of the medial plantar fascia. Frequent stretching of this area, strengthening of the peroneal, and a transition from a normal to a straight last shoe and then to a swung-out shoe are performed as rapidly as possible.

Equinus, with either valgus or varus, is of such common occurrence that its presence immediately suggests brain damage. Application of a single upright inside or outside bar brace, depending on the presence of varus or valgus, respectively, will usually suffice. A long leg brace or night splint

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\* From the Aidmore Crippled Childrens Convalescent Hospital.



may be necessary when the gastrocnemius is severely involved. Tendon-lengthening procedures are best postponed until full growth is attained. Oc-



Fig. 1. — Spastic peroneals. Inactive anterior and posterior tibials together with adducted knees produce this frequent valgus deformity.



Fig. 2. —Genu recurvatum. A direct result of contracted Achilles tendon.



Fig. 3. — Severe dislocation of the hip in an athetoid.



Fig. 4. —Full control braces with gluteal strap to correct extensor thrust and hip dislocation.

casionally, the reverse finding of weak gastrocnemius soleus group and spastic dorsiflexors is found. The same brace is indicated, and dorsiflexion or plantar flexion, inversion or eversion performed as occasion demands.

Knee flexion contractures in persons with spasticity, athetosis or rigid-



ities are resistant to treatment, often necessitating tenotomy. A long leg brace with dial setting may suffice in less severe cases. Upward dislocation of the patella due to a spastic quadriceps is seen frequently; advancement



Fig. 5. — Fixed scoliosis in a severely involved athetoid.

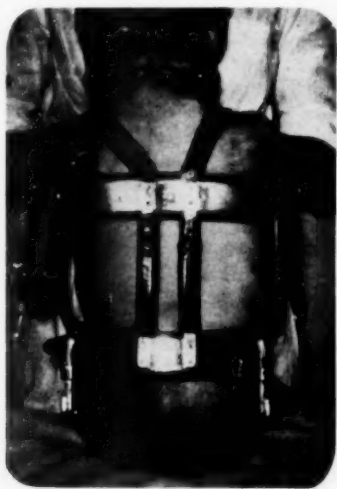


Fig. 6. — Partial correction of scoliosis with back and lateral uprights.



Fig. 7. — Limitation of motion in upper extremities in an athetoid.



Fig. 8. — Hand splint of "celastic" to maintain wrist and finger extension.

or shortening of the patellar tendon yields a more functional joint. Back knee, occasionally in severe degree, is found in spastics, particularly when the child has been instructed to keep the heel on the floor, without attention



being paid to a contracted heel cord (fig. 2). Knock-knee with tibial torsion develops as a result of knees being braced against each other for balance.

Hip dislocation presents a serious problem and one which can be rapidly progressive. It is of frequent occurrence and may appear early (fig. 3). Causative factors are tight adductors and hip flexors, producing at first a posterior subluxation. As the lip of the acetabulum is worn away, dislocation occurs, followed by lordosis and scoliosis. Corrective measures consist of a trial period of stretching of contracted adductors and hip flexors with long leg splints and spreader bar. Early neurectomy or tenotomy is indicated if these measures fail. A gluteal strap on full control braces corrects lordosis and decreases the apparent shortening of the involved leg (fig. 4).

The scoliosis seen in cerebral palsy is by far more frequent in patients with spasticity and rigidities, although the fixed deformity is also seen in the athetoid group (fig. 5). Stretching, relaxation, and derotation exercises in conjunction with bracing, corset, or acetate jacket are indicated, both to stop progression of the scoliosis and, by stabilizing the trunk, to give increased use of the extremities (fig. 6). Control of extensor thrust, which is so common, is of utmost importance in obtaining early ambulation and self help.

Shoulder deformities are most frequent and severest in the spastic hemiplegic and follow the pattern of contracture in internal rotators, abductors, and forward flexors of the arm. In athetoids with severe involvement of upper extremities tightness of the muscle groups involved in their particular posture may also develop (fig. 7). Stretching, muscle reeducation, and strengthening comprise the active therapy though often a splint must be applied to hold a functional position.

Pronators are frequently involved in all types, but they respond fairly easily to stretching and occupational therapy.

The typical hand position is that of wrist flexion with radial deviation, and flexion of fingers and thumb. A elastic cock-up splint providing for finger and thumb extension can be made easily and replaced as improvement occurs (fig. 8). It is particularly important to maintain the desired position of the hand throughout day and night, as this distal segment relapses quickly. Strengthening of extensors by physical and occupational therapy should proceed concurrently with the release of contracture.

Supervision of the cerebral palsied child should be carried on throughout the growing period, as even in mild cases deformities develop which can interfere with a useful life. Emphasis continues to be on prevention of deformity, with particular watch kept for the abnormal patterns which are most likely to occur.





## ORGANIZATION OF A CLINIC FOR CARE AND TREATMENT OF CHILDREN WITH CEREBRAL PALSY \*

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This paper might well be subtitled "There Can Be No Specialists in Cerebral Palsy." In an age of specialization and specialty boards this may sound like heresy, but to be a specialist in cerebral palsy one must specialize in physical medicine, orthopedic surgery, psychiatry, neurology and pediatrics, and, in some cases, in certain other fields. There can be no specialists in cerebral palsy for, except in a few instances, cerebral palsy is much too complicated a problem. Proceeding on this premise, a Group Clinic was organized for the care and treatment of children with cerebral palsy, and now after three years it appears appropriate to describe this clinic, its organization and operation.

The problems associated with the care and treatment of children suffering with cerebral palsy are not new. They and their parents have drifted from doctor to doctor or from hospital to hospital. No one doctor and but few hospitals are prepared to meet all the various problems presented by these patients. And as these problems have become known, it has been realized that without treatment these patients become burdens to themselves, their families and their communities. However, with proper treatment and education for the patient and with a broad program of enlightenment for the family and community, much can be accomplished. As these patients develop their intellectual and motor skills and particularly as they and their parents develop a proper understanding of the total problem, their relationship to their families improves and brothers, sisters, and parents all are able to lead more normal lives. At the same time they become less dependent on society and are better able to contribute to it.

A comprehensive program designed to meet the problems of the patient, the family and society should include a group clinic, proper educational facilities and certain community activities. These three parts of the program will be discussed in turn.

The Group Clinic to be described was organized as a part of the pediatric out-patient department of a teaching hospital. The staff of the clinic includes both professional and operating personnel. The active professional staff consists of consultants from the Departments of Physical Medicine, Orthopedic Surgery, Neurology, Pediatrics and Psychiatry. These consultants and their alternates either volunteered or were appointed to the clinic by the chiefs of their departments to serve for at least a year. During this year each consultant spends from half a day to a full day a week in the clinic. Since the inception of the clinic, essentially the same group has participated, and their competence has, of course, grown with experience. The representative from the Department of Pediatrics has served as Director of the Group Clinic. Other consultants from the Departments of Ophthalmology, Dentistry and Otolaryngology are available as their services may be required.

The operating staff consists of various clerical workers and nursing personnel provided by the hospital; of physical, occupational and speech thera-

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\* Read at the Twenty-Eighth Annual Session of the American Congress of Physical Medicine, Boston, Aug. 29, 1950.



pists assigned to the Group Clinic from their respective departments, and of medical social workers from the Department of Social Service. Complete laboratory facilities including psychological testing are also available for all patients.

The patient is referred to the Group Clinic through the usual channels and is seen in turn by the various consultants and the medical social worker. Appropriate laboratory studies are carried out and referrals to other special clinics are made as required.

Following these visits the patient and his parents are seen at the Group Clinic conference. These conference meetings have been held twice a month and are attended by all members of the clinic, including consultants, therapists and clerical assistants. These meetings have proved of great value, for here both the patient's and his parents' problems can be considered in their entirety. First, the history and laboratory studies are reviewed by the Director. Then, each individual consultant elaborates upon his own particular findings. An open discussion takes place concerning the diagnosis, the patient's basic capacities, and the problems involved in instituting and carrying out a successful treatment program. Finally, the treatment program itself is outlined in detail.

The principal diagnosis usually describes one of the customary types of cerebral palsy. However, each consultant is likely to contribute one or more additional diagnoses depending on the nature of his particular specialty. The diagnoses listed will include, therefore, in addition to some form of cerebral palsy, specific conditions concerned with pediatrics, neurology, orthopedics or psychiatry. This has proved valuable in working out a complete treatment program for as a result the patient is more apt to be treated as a total individual rather than as just a case of diplegia or athetosis.

The degree to which any particular patient can be trained or educated depends greatly on the extent and nature of his physical handicap and his mental capacity. A patient with a mild handicap and low intelligence may do poorly; whereas another patient with a severe handicap but with average or superior intelligence often does well. Each patient is given at least a trial of treatment. It is impossible to measure accurately the intelligence of a child who has neither speech nor the use of his arms and legs. A child who gives an initial impression of being uneducable may make surprisingly good progress. However, if after a reasonable period of time, no progress is made, treatment is stopped. In some instances after a year or more a second trial treatment may be given.

In addition to these factors of physical handicap and mental capacity, several other secondary factors must be considered in working out a treatment program. Specific treatment will accomplish little or nothing where either the patient or his parents are disturbed emotionally. It is most difficult to work with a child who is either overprotected or rejected, for such children frequently exhibit severe behavior disorders. Similarly, a parent, if disturbed by feelings of guilt or shame, can cooperate but poorly. Experience has shown that in all but the mildest cases these factors may spell the difference between success and failure. Therefore, for any one child, much time is spent in evaluating the extent and the importance of these problems and in fact they form the groundwork upon which the entire treatment program is built.

Other problems of a purely administrative nature are worked out by the medical social worker. These include questions of transportation, fees, the completion of forms for State aid, the acquisition of braces and arrangements for home therapists or teachers.



The specific treatment program itself includes, in many instances, both physical and occupational therapy and speech therapy for the patient as well as some form of guidance of psychotherapy for the patient and his parents. More than half the patients are treated in the clinic by the clinic therapists for one-half hour sessions one or more times a week. For these, transportation is provided by a voluntary agency. Others are treated in a similar manner at home by therapists provided by the same or other voluntary agencies. In all instances the orders for treatment are written by the consultant in physical medicine. In addition, these patients with the physical therapist visit the clinic for a coordinated re-evaluation of status every four months. Some patients may be treated by their parents at home and are seen in the clinic only two or three times a year. A fourth group of patients receives intensive treatment as in-patients in a special unit.

Guidance and psychotherapy are provided, in the clinic, by visits to the psychiatrist or psychiatric social worker; on a continuous basis by all members of the clinic; and by group psychotherapeutic sessions arranged by and for the parents.

Following the initial work-up and the initial visit to the Group Clinic, conference one of the treatment programs outlined above is instituted. Subsequently, depending on the specific nature of his problem, the patient may be seen from time to time by one or another of the various consultants and again, at intervals, by the Group Clinic conference. At these latter meetings the patient's progress is described and demonstrated by the therapists. The use of braces, special drugs or operative procedures may be discussed. Or, if little or no progress has been made, the question of stopping treatment or of institutionalization may be raised. In any event the relationship of the patient to the Group Clinic is an organic and continuous one.

The Group Clinic serves not only as a diagnostic and treatment unit but also as a teaching and research center. It can be effectively utilized for the instruction of nurses, medical students and house officers for, just as there can be no specialists in cerebral palsy, neither can the student expect to obtain a complete picture of cerebral palsy in his separate courses in pediatrics, neurology or orthopedics. In the group clinic he is given an opportunity to grasp quickly the full significance of this disease. Similarly, residents in various specialties can study the relationship of their particular interest to the problem of cerebral palsy as a whole. Student physical, occupational and speech therapists gain valuable experience during their assignment to the Group Clinic. For, in the Group Clinic, they work under the supervision of the chief therapists, who devote their entire time to work in cerebral palsy. And finally, the Group Clinic conferences have proved to be of considerable value to professional and lay visitors alike.

The excellent opportunities offered for research are obvious. Directed and coordinated research programs can be carried out in any of those phases of medicine, psychiatry and education which are part of cerebral palsy.

An important part of the clinic is an in-patient unit where certain selected patients are treated by a resident staff under the direction of the consultants of the Group Clinic. This unit is part of a convalescent home for children. Here patients receive intensive treatment and schooling away from their home environment. Behavior patterns, which interfere with treatment in the home or in the out-patient department, tend to disappear in the relatively relaxed atmosphere of this unit. And the factors of poor or non-existent cooperation on the part of the parents at home are eliminated. In some instances sudden rapid progress is made. In others, it is clear after a



short period that, at least for the moment, further treatment is of no avail. In this way much valuable time and effort are saved. It is probable that more and more patients will be referred to this unit, because so much can be learned and so much can be accomplished in a relatively short period of time.

The education of children with cerebral palsy remains a great problem. In the first place special physical facilities must be provided. Many of these children can not walk or climb stairs and for these reasons and because of fire laws it is impossible for them to use ordinary classrooms. Secondly, children who have difficulty in learning to speak and write and who in addition often have severe emotional problems require special methods of instruction.

The children of school age who attend the clinic receive instruction in special classes for handicapped children. These classes have been set up in the public schools by the Board of Education. Unfortunately, children of all ages and of all degrees of intelligence must be placed in the same room. This represents one of the weakest parts of the whole program. Ideally the treatment center and the school facility should be housed in the same building. Such an arrangement would offer all the advantages inherent in the group approach.

Children of pre-school age should also be given an opportunity to attend a play or nursery school. Many have led secluded and protected lives and association with other children helps them to develop much needed confidence and independence. Such a school for children of this age group is described later.

Chief among the community programs contributing to the work of the clinic is the parents' club. This club is made up of the parents of the children and, in some instances, relatives and other interested individuals. Regular monthly meetings are held at which the members of the club are addressed by various professional workers or other individuals in the community who have some particular interest in the problems of cerebral palsy. The club has raised money for various projects including pieces of equipment and social events for the children. Such an organization provides an excellent opportunity to carry out some form of group guidance or psychotherapy. Parents obtain a better understanding of their problem when they realize that others have equal or greater problems and when they are given an opportunity to discuss their problems with other parents. This group approach has proved particularly valuable for those parents whose children require speech therapy.

Another voluntary unit is a recreation center for the children attending the clinic. Here trained workers supervise organized play for the children. This program provides a much needed outlet for the socialization of the child, and also complements work done by the physical, occupational and speech therapists.

A group clinic offers the best opportunity to carry out a complete and well integrated program for the care and treatment of children with cerebral palsy. The principal advantage of such an organization is the fact that the child's total problem can be considered at one time and place. A great majority of the patients coming to the clinic give a history of previous contacts with many different doctors and hospitals. These experiences are both expensive and discouraging and it appears that a group clinic tends to reduce such shopping around.

In many respects cerebral palsy is still a new disease. Much remains to be learned. Many different forms of treatment are advocated and all with good reason. However, it would seem that the opinions of several specialists,



all given at the same time, would permit the development of a better balanced treatment program.

One final advantage of a group clinic is the fact that continuous and co-ordinated emphasis can be placed on the psychological and social aspects of each case. To some, the treatment of these problems is more important than specific physical and occupational therapy. This remains to be seen. In any event, it is clear that such emphasis is justified and it is clear, too, that it can be best applied by a group clinic.

### Summary

The organization and operation of a group clinic for the treatment of children with cerebral palsy is described. The patient is seen by the various professional consultants and then the case is discussed by all the members of the clinic at a group clinic conference. A treatment program is outlined, particular emphasis being placed on the psychological and social aspects of each case. Educational facilities for pre-school and school age children are described as well as the parts played by the parents and certain voluntary and community groups.

### Discussion

**Dr. George Deaver** (New York, N. Y.): It is with a deep sense of satisfaction that we see that our Congress is giving a period in its program for the discussion of the problems of the cerebral palsied individual. The principal treatment of cerebral palsy is by physical and occupational therapy and rehabilitation procedures. It is therefore essential that physiatrists become aware of the problems in this disabling condition and become members of the team needed for its treatment.

The papers which have been read present two of the problems in cerebral palsy: the organization of the cerebral palsy center; the deformities produced by the neuromuscular pathology.

Dr. Greeley has presented the group clinic method for the diagnosis, classification of type and treatment of the cerebral palsied child. There is no question but that this is an ideal method when the center is part of a medical university unit. Unfortunately, this is possible only in the larger centers. One of the chief problems to decide, because of the multiple neuromuscular handicaps associated with the brain damage, is what medical specialists to use on the active professional staff and who shall be used as consultants. In a study of 210 cases in my clinic, 70 per cent of the patients needed the advice of the speech consultant and 15 per cent the ophthalmologist, while only 2 per cent needed the services of the orthopedic surgeon.

It is important to keep in mind what Dr. Greeley so well stated, that in an outpatient cerebral palsy clinic, successful treatment depends as much upon solving transportation problems, acquiring braces, parent education, and psychosocial problems as it does on physical and occupational therapy and drugs.

One of the major problems in the rehabilitation of cerebral palsy is to reduce spasticity, athetosis or ataxia in order to help the patient perform voluntary func-

tional movements. Many research workers have been endeavoring to find a drug which will accomplish this purpose. Dr. Hoberman, using tolserol and dioxolane, does not believe these drugs are of much value in cerebral palsy.

Dr. Gillette has pointed out that deformities in cerebral palsy are seen most frequently in the spastic and rigidity types, and infrequently in the athetoid and ataxia, and that the most frequent deformities occur at the ankles and knees. Being aware of the deformities which are most likely to occur as a result of imbalance of muscle power and growth, endeavoring to prevent them from occurring by passive relaxed movements and bracing and knowing the corrective procedures by surgery when they do occur, are a part of the clinical knowledge necessary for the physician treating cerebral palsy.

Our thanks are due the speakers for the presentation of their observations, as any method for improving the physical and mental status, no matter if it is not great, prepares the way for better results in treatment.

**Dr. Harriet E. Gillette** (closing): I want to state that I agree very thoroughly with Dr. Deaver on the new problem which we meet in the out-patient work in cerebral palsy. It is not comparable in any way to what we meet in a controlled situation in a hospital.

In a very poor section of the country, one of our major concerns is, what are we going to do when we cannot buy braces or, perhaps, cannot buy shoes? Parents can be made very good physical therapists, parents who cannot either read or write. It taxes the ingenuity of the doctor and the therapist who is doing the instructing to quite an extent, occasionally, to find what they can do to make up for what they cannot purchase.

A controlled situation where we are able to buy all the things we would like to



sultants as we would like, is quite a different problem from one in which there is one person in an area and very limited social agency support to be obtained.

I wish that every one interested in cerebral palsy would go over to the National Society for Crippled Children and Adults' booth. Just in the last week, they have published a book on cerebral palsy equipment. Somebody came to me, for instance, and said, "How can I make parallel bars which are collapsible in the home?" Well, this book gives all this information.

I think if one has a cerebral palsy clinic, he will have to ask: What are the objectives of your cerebral palsy clinic? I have listed five objectives for a cerebral palsy clinic: First, the individual should be able to walk or ambulate. Second, he should be able to take care of himself, which we

call self-care. Third, he should develop the maximum use of the hands. Fourth, he should be trained in speech. And, fifth, he should have the appearance of being normal.

Those are the objectives that I think are important and, I can't at this time reach my objectives with drugs. If the person relaxes a little, that is wonderful, but if it doesn't help him to walk or take care of himself or have better use of his hands or help his speech, then I would rather use some other medium to help him. I think we will have to look somewhere else for help at the present time. Perhaps some day we will have a drug to help us. I think it is very important to do this research, to know that we have to do it by hard work and not by miracle drugs. I just wanted to emphasize that point.

## A USEFUL MEASUREMENT TOOL IN THE PHYSICAL REHABILITATION PROGRAM OF PRESCHOOL ORTHOPEDICALLY HANDICAPPED CHILDREN

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and

GEORGE R. STEPHENSON, M.A.

### Introduction

The need for an adequate test of motor skills for use with the preschool handicapped child has been recognized for sometime by most workers in the field of physical therapy and rehabilitation. Tests such as What's My Score,<sup>1</sup> and Daily Activity Inventory<sup>2</sup> although excellent, when modified and adapted for the preschool handicapped child, were found to be grossly inadequate. Many of the activities in What's My Score and similar daily activity tests are obviously of no use in the testing of the preschool child (e. g., shaving, typing, carrying a package), first because the child was too small or young for the activity, and second because the child had no need for the activity at this stage of his development.

With the realization that the handicapped preschool child should be evaluated only for those activities which he might be expected to have accomplished if he had developed normally, we therefore turned to Gesell<sup>3</sup> for an inventory of motor abilities at preschool levels. Miss V. Joyce McInnis, Registered Physical Therapist<sup>4</sup> was placed in charge of the Baby Clinic and

1. What's My Score?: Veterans Administration Pamphlet 10-10, Medical Rehabilitation Service, Department of Medicine and Surgery, 1946.

2. Brown, Mary Eleanor: Daily Activity Inventory and Progress Record for Those With Atypical Movement, The American Journal of Occupational Therapy, Vol. IV, No. 5, Sept.-Oct. 1950.

3. Gesell, A.; Ill, F. L.; Ames, L. B., and Bullis, G. E.: The First Five Years of Life, Harper and Brothers Publishers, New York, 1910.

4. McInnis, V. Joyce, former Acting Supervising Physical Therapist, Physical Rehabilitation Section, New York State Rehabilitation Hospital, presently Physical Therapist, White Memorial Hospital, Los Angeles, California.



assigned the project to develop a "Baby's Daily Activity Test." With the assistance of Miss Eileen E. Pagel, Registered Physical Therapist<sup>5</sup> the "Physical Demands of Daily Living for the First Five Years of Life" was designed. (See figures 1 and 2). This test was used in approximately forty-five evaluations. The age levels noted in the test were taken from Gesell.<sup>2</sup> Activities were divided into nine activity groups, similar to those used in the adult test. This test, although more satisfactory than the modified Daily Activities Inventory and Progress Record,<sup>3</sup> also presented some objections after test results and ratings were studied. It contained twenty-five items to be achieved before the age of two years, six items from the second to third years, six items from the third to fourth years, and five items from the fourth to fifth years, and no items from the fifth to sixth years. It presented no clear cut picture of the child's motor development at his particular age level to be compared with normal children at that age level. We also found that as a result of the test we were prescribing and administering therapy to develop certain definite skills which might be useful later in childhood and adolescence, but which were inappropriate or impossible of accomplishment because of the physical immaturity of the child. Instead we should have been concentrating on those activities and skills which would be reflected in the child's normal growth and development at his present age level. The difficulty was not so much in the test items, as it was in our viewpoint or philosophy of rehabilitation for the handicapped preschool child. Our primary emphasis should not have been independence in daily demand activities, but rather maturation and development at the patient's age level. This change in philosophy of rehabilitation for the handicapped child does not eliminate activity items in the test; it merely relates independence to the maturity level of the child.

### The Functional-Development Motor Scale

The test presently in use at the New York State Rehabilitation Hospital, West Haverstraw, New York, was therefore developed to evaluate first, maturation and development, and second, daily demand activities of a particular age level. This concept also takes into account an awareness of "readiness," that is, the determination of when the preschool child is ready for daily activities training in relation to problems of everyday living. In some cases it may be better to delay daily activities training until a more "timely" age. The Functional-Development Motor Scale plus the usual muscle tests, provides effective means of evaluating maturation and development, readiness for activity training, the activities to be taught, and how much activity training to assign at any particular age (see chart).

*Administration.* — In the administration of the test, the therapist-examiner starts at the level closest to the patient's chronological age and proceeds down the scale until all items on a level are passed. Items above this age level are also tested until no items are passed at one level. Items need not be given in the order listed, but may be varied in accordance with the convenience of the examiner and the interests and physical abilities of the patient.

*Scoring and Grading.* — The test lends itself readily to scoring and grading, and a system for such mensuration has been devised. The directions for grading are explained in the "Key to Grading" chart. The performance is graded at the time of testing and colored in the appropriate boxes. Final

5. Pagel, Eileen E., former Acting Supervising Physical Therapist, Physical Rehabilitation Section, New York State Rehabilitation Hospital, presently Physical Therapy Consultant, Society Crippled Children and Adults for the State of Texas.



NAME: \_\_\_\_\_ BIRTH DATE: \_\_\_\_\_  
DIAGNOSIS: \_\_\_\_\_ APPARATUS: \_\_\_\_\_  
DISABILITY: \_\_\_\_\_

### SED-Learned Activities.


- |        |   |            |
|--------|---|------------|
| N-100% | Activity accomplished completely and independently. | (4 Blocks) |
| G-75%  | Activity performed, but required further practice.  | (3 Blocks) |
| F-50%  | Activity performed, but not with safety.            | (2 Blocks) |
| P-25%  | Activity performed with assistance.                 | (1 Block)  |
| O-0%   | Inability to perform activity.                      | Blank      |
|        | Activity beyond limits of patient's capabilities.   | (Diagonal) |

**KEY TO SCORING**

### Dates Tested

I. Number Of Items Accomplished.

(Within The 75-100% Range)

II. Number Of Items Normally Expected To Be Able To Perform (At Present Age Level)

Within The 25-50% Range

III. Number Of Items Failed (Items Considered Within Limits Of Patient's Disability, But Unable To Perform)

IV. Number Of Items Considered Beyond Limits Of Patient's Disability.

$$\text{Score I} \times 100$$
V. Functional-Maturational Level.

Score II

VI. Rehabilitation Level.

$$\text{Score I} \cdot \text{Score IV} \times 100$$

Score 11

### KEY TO SYMBOLS USED

WITH APPARATUS.

NA-NO APPARATUS.

## ACTIVITIES

GRADE

## FINA

TWELVE MONTHS

1. Rolls Over.
2. Hitches Along, Crawls.
3. Sits - Unsupported.
4. Creeps - Weight On Hands and Knees.
5. Walks - Few Steps, Holding On (One Hand Held)
6. Unties Shoestrings.
7. Cooperates in Dressing.
8. Walks with And without Supervision in Parallel Bars.

EIGHTEEN MONTHS

9. Creeps Downstairs Backwards.
  10. Walks Along Pulling Tow.
  11. Rises To standing Position.
  12. Walks Up Stairs - One Hand Held.
  13. Seats Self In Small Chair.
  14. Remove Socks.
  15. Ungins Zippers.
  16. Drinks From Cup Unassisted.
- PAC 124145
17. Get In And Out Of Adult Chair.
  18. Hums Without Felling.
  19. Throws Ball Inaccurately.
  20. Walks Up And Down Stairs Alone (Parking Fine)
  21. Kicks Large Ball.
  22. Take Off Shoes.
  23. Put On Socks.
  24. Steps Over Doorsill.

THREE YEARS

25. Walks Backwards - 10 Feet Or More.
26. Jumps From Floor - Feet Together.
27. Rides Tricycle Using Pedals.
28. Walks Up Stairs Alone Alternating Feet.
29. Jumps Down From Eight Inch Step with Feet Together.
30. Up And Down 10 Degree Ramp - Four Feet Long - Feet Position.
31. Puts On shoes - Except For Tying.
32. Open And Close door.

FOUR YEARS

33. Stands On One Foot 4-8 Seconds.
34. Skips on one foot (walking on other foot)
35. Jumps - Broad Jump 8" to 10"
36. Catches Large Ball - Elbows Flexed.
37. Throws Ball - Overhand.
38. Laces Shoes.
39. Put on Clothing with Little Assistance.
40. To Toilet Alone.

FIVE YEARS

41. Skips - Alternating Feet.
42. Stands in One Foot More Than 10 Seconds.
43. Walk 3 Yards on His Toes.
44. Run 35 Yard Dash in Less Than 10 Seconds.
45. Descend Stairs Alternating Feet.
46. Dresses And Undresses Without Assistance.
47. Up And Down 6 Inch Curb.
48. Balance on Toes Several Seconds.

SIX YEARS

49. Jump from 12 inch - Lands on toes.
50. Stands on Alternating Feet - Arms Closed.
51. Hop 20 Feet in 9 Seconds.
52. Run 15 Yard dash in Less Than 9 Seconds.
53. Standing Broad Jump 38 inches.
54. Tie Shoelaces.
55. Up And Down 8 inch Curb.
56. Ascends and Descends 4x5 Steps.



scoring is reserved until the test has been completed, then activities accomplished, activities failed, and activities excluded because of disability are totalled. To these are also added activities accomplished by the normal child of equal age.

After the testing and grading have been completed, totals are entered on the test sheet for the following four categories:

### I. Number of Items Accomplished

The number of items accomplished by the child are separated into the two categories "Within the 75%-100% Range" and "Within the 25%-50% Range," totalled and entered in the spaces provided on the test form. It must be remembered that the child is given credit for all those items below the level at which all items were passed. Thus if a child successfully completed all items at the three year level he would also be given credit for those at the one year, eighteen month, and two years levels, a total of thirty-two items (plus any items passed beyond the three year level).

### II. Number of Items Normally Expected to Be Able to Perform for His Age

This figure provides a standard whereby the handicapped preschool child can be compared with the physically normal child at the same age level. The number of items which one would expect a physically normal child his age to accomplish can be determined from the following table. The age in years is listed in the column at the left, the additional number of months of age in the row across the top, and the expected number of test items appears in the body of the table. For example, the number of items expected of a child three years, eight months of age is located opposite three years under the column headed eight months, i. e., thirty-seven items expected.\*

TABLE 1.—Table Used in Determining the Number of Items Normally Expected to be Able to Perform at Various Age Levels (Score 11).

Age in Years	Additional Months of Age										
	0	1	2	3	4	5	6	7	8	9	10
1	8	9	11	12	13	15	16	17	19	20	21
2	24	25	25	26	27	27	28	29	29	30	31
3	32	33	33	34	35	35	36	37	37	38	39
4	40	41	41	42	43	43	44	45	45	46	47
5	48	49	49	50	51	51	52	53	53	54	55
6	56	57	57	58	59	59	60	61	61	62	63

### III. Number of Items Failed

This total refers to those items which were at or below the patient's chronological age level and were within the limits imposed by the disability. A child three years and six months old would normally be expected to pass all items at the three year level plus any four items at the four year level. An activity such as "Kicking a Large Ball" (two year level maturation activity) should be possible of accomplishment even though the child is wear-

\* The data relative to the number of items expected has been determined by interpolation and should be regarded as approximate since the test items were chosen as representative of the age level under which they are listed, rather than being a continuous scale with equal intervals between individual test items.



ing one toe drop brace. In this case the disability would not preclude the activity and it would be considered "failed" if not accomplished.

#### IV. Number of Items Considered Beyond the Limits of Patient's Disability

The therapist-examiner in consultation with the supervising physician decides which activities were failed because their accomplishment was not possible when the extent of disability and/or appliances used are considered. This total therefore represents accomplishment impossible because of disability at or below the chronological age. For example, a four year old paraplegic patient using bilateral long leg braces, pelvic band, and crutches cannot achieve "Run Without Falling" (a two year level maturation activity) because of disability and apparatus used.

#### Functional-Maturational Level and Rehabilitation Level

Once the above scoring has been completed the total of the various categories given above can be utilized to determine Functional-Maturational Level and the Rehabilitation Level. Functional-Maturational Level represents that portion of the activities expected of a physically normal child of like age which were successfully performed by the child being tested. It is calculated by dividing "Score I" by "Score II" and multiplying by 100. The resulting number is then entered in the space provided. The Rehabilitation Level represents that portion of the activities of the physically normal child which were successfully performed by the child being tested plus the number of items beyond the limits of the patient's disability. This is obtained by dividing the total of "Score I" and "Score IV" by "Score II" and multiplying by 100. The resulting figure is similarly entered in the appropriate space.

The Functional-Maturational Level provides an index of comparison between the functional accomplishments of the handicapped child and those of the physically normal child of similar maturational development in terms of the tested activities. Rehabilitation Level provides an index of the amount of progress and rehabilitation accomplished at this particular age level with due consideration for the extent of disability. For example, two patients each three years old; "Score II" for both is therefore thirty-two; let us assume that "Score I" for both is sixteen; therefore the Maturation-Developmental Level for both is fifty per cent; however, "Score IV" for Child A is eight, whereas "Score IV" for Child B is sixteen; Rehabilitation Level for Child A is seventy-five per cent whereas the Rehabilitation Level for Child B is one hundred per cent. Child A would therefore have the theoretic possibility of twenty-five per cent further improvement in Rehabilitation Level as well as in Maturation-Development Level at this particular age level, whereas Child B presumably had reached maximum rehabilitation at this age level and could not improve his Maturation-Development Level because his disabilities precluded such improvement. This would not necessarily mean that Child B should be discharged from the rehabilitation program, since some of the items in "Score I" may have been in the twenty-five to fifty per cent range. Wherever possible these should be brought up to the seventy-five to one hundred per cent range prior to discharge from the program. It is also to be remembered that the score may be changed from age level to age level, since with greater maturity he may accomplish some activities now considered impossible, or be able to perform a smaller proportion of the activities expected of older children.



It is fully realized that the proposed test is by no means as objective as it sounds. Much of the grading of activities is on very subjective grounds (e. g. twenty-five per cent, activity performed with assistance — how much assistance?; also in determining which activities cannot be performed because of disability). Naturally many other factors contribute to the test results other than those mentioned (e. g., age of onset, degree of motor skills previously attained, previous experiences and training). The Functional Development Test is offered merely as another aid in determining maturation and development in handicapped preschool children as well as prognosticating rehabilitation potential at a certain age level.

### Summary

1. There has been need for a test for motor skills in the preschool handicapped child.
2. Revision and adaptation of adult tests results in inadequate tests.
3. The development of the proposed Functional Development Test has been outlined.
4. Activities used in the proposed test have been taken from the work of Gesell<sup>3</sup> on the normal preschool child.
5. The method of grading and scoring in the Functional Development Test permits the evaluation of maturation development and rehabilitation potential in the preschool handicapped child.
6. Disadvantages and shortcomings in the test are realized.
7. The test is intended as another aid in evaluation, prognosis, and prescription for these children.
8. It is further realized that grades and scores may, and probably do change at various age levels for the same child.

### IMPORTANT ANNOUNCEMENT

Notice to all members of the American Society of Physical Medicine.

Please take notice that at the forthcoming annual meeting of the American Society of Physical Medicine to be held September 6, 1951, in Denver, Colorado, there will be submitted for acceptance or rejection the following amendment to the By-Laws of the Society:

"Amend Article I of the By-Laws to read as follows:

"Article I — Name.

"The name of this organization is the American Society of Physical Medicine and Rehabilitation, hereafter referred to as Society."



## DEVICE FOR GRASP AND RELEASE BY THE COMPLETELY PARALYZED HAND

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Although replacement devices in amputations of the upper extremity have been developed extensively in recent years, relatively little has been done to provide functional appliances for the patient with a hand completely paralyzed by neuromuscular disease. In the course of treatment of many such cases, the need became apparent for any mechanical assistance which would aid the patient in the essential function of grasping. Such assistance would enable him to perform simple tasks independently which he previously could not undertake without help.

A device was designed, based on the familiar principle of the "hook" used as a prosthesis by the amputee. Instead of the metal hook, a rigid, form-

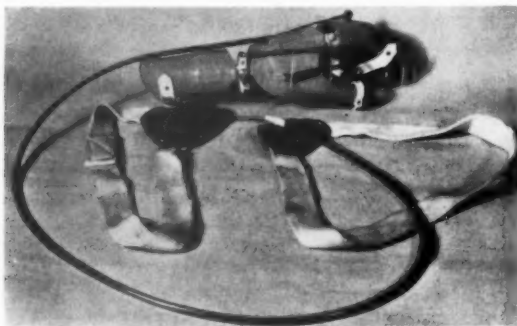


Fig. 1. — The "Handy Hand." The patient's fingers and thumb are strapped in the form-fitting plastic case. Grasp is provided by the elastic band and release of grasp through the harness and cable is performed by voluntary motion of the scapula.

fitting glove-like structure is made of cotton stockinet impregnated with Scleron plastic, which fits over and is strapped to the patient's paralyzed hand. The device is jointed, and the fingers and thumb of the patient are brought together in a firm grasp by an elastic band. The hand is opened by a harness and cable through motion of the scapula. In this way, power of elevation or abduction of the scapula, which is not of practical value when the hand is completely paralyzed, can be applied to opening of the hand to provide release of grasp. The power of continuous grasping by means of the elastic band requires no voluntary motion by the patient and is limited only by the power of release of grasp through scapular motion.

The device, labeled by Robin-Aids, the manufacturer, as the "Handy Hand" consists of three sections (fig. 1). One section covers the fingers and is joined at the level of the metacarpophalangeal joints with a second portion



which covers the metacarpal and carpal bones, and finally, a forearm section which joins the middle section at the wrist, and serves to stabilize the wrist when little or no muscular activity is present. When there is sufficient motor power in the wrist, the forearm section may be omitted entirely, since it limits lateral deviation of the wrist. The cable housing is anchored to the back of the metacarpal section and the cable itself is attached to the digital portion. There is a linkage bar between the wrist piece and the metacarpal section.

The harness is similar to that used in the hook. It may be shoulder to leg in type, with the leg anchoring the apparatus and elevation of the scapula providing the power. It may be shoulder to shoulder in structure, in which case, one shoulder anchors the harness and abduction of the scapulae provides the power. Or where a patient is in a wheelchair, the anchor may be attached to the chair, with power provided by elevation of the scapula.

To illustrate the indications for the "Handy Hand," two cases are presented:

CASE 1. — Female, age 33. This patient had a complete transection of the spinal cord at the level of C-5 and C-6 from fracture of the cervical spine in an automobile accident in 1946. Three years after the injury, she exhibited fair shoulder motion, fair flexion of the elbows with only a trace of extension, good supination of the forearm



Fig. 2. — Patient with complete transection of the spinal cord at C-5-6 using the "Handy Hand" for writing. This enabled her to type, comb her hair, feed herself, brush her teeth, use cosmetics and perform many other essential activities for the first time since the injury, despite complete paralysis of both hands.

and a trace of pronation. She had a trace of extension in both wrists and no flexion. There was no evidence of muscular activity in the fingers. Sensation was absent in the hand. She, therefore, had essentially no practical use of her upper extremities. A program of intensive physical therapy was prescribed for all weak motions of the upper extremities and she was fitted with a "Handy Hand," opened by elevation of the scapula and anchored to her wheelchair. This provided effective grasp and release by the paralyzed hand. She was taught to perform numerous tasks including writing, feeding herself, brushing her teeth, combing her hair, putting on makeup and typing (fig. 2).

CASE 2. — Male, aged 13. This patient had poliomyelitis in December, 1946, at the age of nine years. Three and one-half years later, he had complete flaccid paralysis of the right arm and hand and also some weakness in the left arm and neck. He was given intensive physical therapy for all weak motions and was fitted with a brace for



the right elbow, which could be locked at various angles, as well as a "Handy Hand." The brace consisted of a biceps cuff, two forearm bands and one jointed tubular metal stay. The biceps cuff and forearm bands attached to respective tubes. The jointed tubular member had a shuttle lock at the elbow joint with a control trigger at the wrist. This permitted the patient to flex the elbow by releasing the trigger at the wrist with the left hand, positioning the right arm and relocking the brace at the desired angle at the elbow. A "Handy Hand" was attached to the brace and was operated by abduction of the scapulae through a harness and cable. Since the therapy had increased voluntary motion of the right shoulder, the right hand could then be used for help in carrying, holding, and various other essential activities, while either sitting, standing or walking (fig. 3).



Fig. 3. — Patient with complete flaccid paralysis of the right upper extremity from poliomyelitis four years before, using the right locked elbow brace and "Handy Hand."

The "Handy Hand" has been used in five other similar cases and has been equally effective in improving practical use of the upper extremities.

#### Summary

A device is described, similar in principle to the prosthetic hook used by amputees, which permits individuals with complete paralysis of the hand to grasp small objects and thereby use the hand to perform essential activities which had previously been impossible.









learn the balance which will give them confidence in walking. Therefore, if we could combine our teaching of crutch walking and crutch balancing with some purposeful activity, such as lathe operation, welding, or woodwork, we might appeal to these men to continue ambulation long enough to develop the habit.

One of us (Q. W. G.) devised an apparatus which makes it possible for a patient to be completely independent in getting himself to the standing



Fig. 2. — Patient sitting in wheel chair fastening corset on himself.

position for work and down again to rest or work at a table. The device described below was designed to be stable enough to give complete confidence to any paraplegic patient, no matter what his level.

The standing apparatus consists of a canvas corset mounted on a plywood board by means of rivets. Two round steel plugs are welded 10 in. apart into a narrow steel plate, and this plate, in turn, is riveted into the plywood. The corset is adjustable and can be strapped on by the patient while he sits in the wheel chair (figs. 1 and 2).

The padded portion is placed against his chest and upper abdomen, and the belt is wrapped around his body and buckled. The corset is made with two canvas pieces, the lower one used for low lesions, and both used for high lesions or if the patient's balance is poor. He can then wheel over to his intended work station, lock his long-leg braces in extension and pull himself erect in front of the flat steel vertical bar, which is fastened securely to a work bench or the machine he wishes to use (figs. 1 and 3). The two round metal plugs that are welded into the corset are inserted into the holes in the bar that fit the patient's height. He then presses himself against the bar, making the tapered ends of the plugs force open the parallelogram locking system. Spring tension closes the parallelogram into the notches in the two plugs. An extra pin is placed into the parallelogram for safety. The patient is then held securely upright and may begin to work (fig. 4). To release himself, the patient may either un-



buckle his corset or pull the release trigger forcing open the parallelogram. He then pushes himself backward about 2 in. and lowers himself into his chair, or if he wishes, may walk away with his crutches. By similar maneuvers he may change to several work stations in the manual arts clinic. (Figure 5 shows a close-up of the locking system on the metal upright with a therapist holding the adjustable corset so that the plugs may be seen.)



Fig. 3. — Patient with corset fastened on pulling himself from wheel chair to the vertical metal bar.

We have used this device only a few months, but it has proved an effective means of motivating patients to get back to ambulating and standing. Non-service-connected patients just learning ambulation and self-care have used this device to develop standing tolerance and to learn whether they could work an eight hour day (work tolerance). The idea of looking forward to a job requiring standing or work which they could not otherwise consider is most stimulating. Since the patient must have good balance to stand and work, he is stimulated to practice crutch walking. Many patients do not have the education or inclination to do office work. The use of this stander should prove a means of achieving a variety of jobs requiring work with the hands while in a standing position. Such a stander could be erected in a patient's home where he could work wherever he chose.

A simpler device might be used by those with lumbar or cauda equina lesions, such as a canvas belt fastened by a hook either in front to a table or behind to a stand or rail. One of our patients reports having devised such an appliance so that he can stand at work in his home workshop.



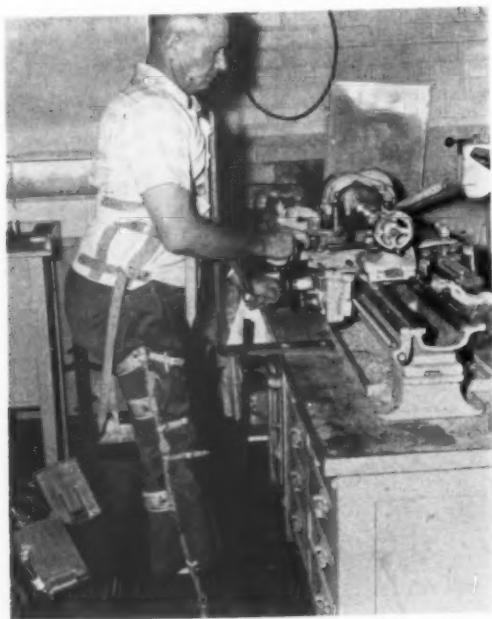


Fig. 4. — Patient standing in the stander working at a metal lathe. His hands are free to do anything he wishes.



Fig. 5. — Close-up of the plugs on the corset and the locking system on the metal bar.

### Summary

A supporting device to enable paraplegic patients to stand at work is described. It is suggested as a possible means to get such patients on their feet as a part of their daily routine.



# ARCHIVES of PHYSICAL MEDICINE

OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL MEDICINE

## ∴ EDITORIALS ∴

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### GO WEST — PHYSIATRISTS — GO WEST!

The program for the 29th annual session of the American Congress of Physical Medicine is printed in this issue of the ARCHIVES. It augurs well for a most unusual and enjoyable meeting. Intellectually, the papers to be presented should be most instructive and stimulating. This year more scientific papers were offered than ever before— many more than could be given at this one meeting. It was necessary to refuse many excellent articles because of lack of space. Everything new and interesting in the field of physical medicine and rehabilitation is included. Symposia on physiology, rehabilitation, poliomyelitis, traumatic conditions and others should arouse particular attention. The results of the numerous studies and research that the many clinics and institutions have been working on during the past year will be delivered for the first time at this meeting.

The scientific exhibits will be excellent. The latest developments will be shown by exhibitors who will be on hand to answer all questions. The technical exhibits too, should attract attention. Many new types of equipment and other features associated with physical medicine will be demonstrated.

The instruction seminar will again be divided into the basic and the more general clinical subjects. The topics are to be given by instructors who are chosen because of their knowledge of their subjects and their ability to give clear and interesting lectures. There is no better way to review the various aspects of physical medicine and rehabilitation than attendance at these seminars.

The first John S. Coulter Memorial Lecture will be given on Wednesday afternoon, September 5th. This lecture is the result of the action taken by the membership at the last annual meeting. This first lecture and those to be given subsequently at the annual sessions are to be a tribute to the late Doctor John S. Coulter who did so much to develop and advance the specialty of Physical Medicine and Rehabilitation.

The section on Tuesday afternoon will be devoted to the educational factors in physical medicine and rehabilitation. Four papers are to be read followed by pertinent discussions. This program should appeal to physicians, technical directors of Physical Therapy schools and any other persons who are concerned with these problems.

Socially, this meeting should establish a record. Denver is the "Mile High" city of the west, boasting of more attractions than any other city. Its parks and beautiful public buildings are renowned. Its weather cannot be surpassed. For those who have additional time, the mountains and near by resorts afford added attractions. This is the first time the American Congress of Physical Medicine has been near the Rocky Mountains. It will be an opportunity to enjoy the hospitality of the west.



# MEDICAL NEWS

## National Doctors Committee

Dr. Robert Collier Page, Chairman of the National Doctors Committee for Improved Federal Medical Services, has announced the completion of an advisory committee of experts from every branch of the medical profession. They will consult with the chairman on matters of policy in the pending campaign to secure wide economies and more efficiency in the present overlapping and competing system of hospital and medical care operated by the government. Dr. Page, who is Medical Director of Standard Oil Company (New Jersey), also announced that his general committee will carry on an educational program for the benefit of 178,000 doctors. He said that this project is rapidly growing.

The National Doctors Committee is an affiliate of the Citizens Committee for the Hoover Report, which is urging passage of the recommendations of the bipartisan Hoover Commission for the unification of the various governmental medical agencies under a single authority.

The advisory committee has been formed to include high-ranking men in the 20 major divisions of medicine and surgery and the allied technical skills, as follows:

Anesthesiology: Charles Fletcher McCuskey, M.D., Los Angeles, California; Dermatology and Syphilology: Donald M. Pillsbury, M.D., Philadelphia, Pennsylvania; General Practice: Samuel Arthur Garland, M.D., New York, N. Y., and Rufus B. Robins, M.D., Camden, Arkansas; Internal Medicine: Maxwell Myer Wintrobe, M.D., Salt Lake City, Utah; Cardiology: George Edward Burch, M.D., New Orleans, Louisiana; Medical Education: Richard Hale Young, M.D., Chicago, Illinois; Neurological Surgery: Howard Clifton Naffziger, M.D., San Francisco, California; Obstetrics and Gynecology: Charles Denton Kerr, M.D., Houston, Texas; Ophthalmology: Donald Marshall, M.D., Kalamazoo, Michigan; Orthopedic Surgery: Lewis M. Overton, M.D., Albuquerque, New Mexico; Otolaryngology: Clair Michael Kos, M.D., Iowa City, Iowa. Also, Pathology: Thomas Byrd Magath, M.D., Rochester, Minnesota; Pediatrics: Lee Palmer, M.D., Louisville, Kentucky; Physical Medicine: George D. Wilson, M.D., Asheville, North Carolina; Plastic Surgery: James Barrett Brown, M.D., St. Louis, Missouri; Preventive Medicine and Public Health: Brig. Gen. James Simmons, M.C., Boston, Massachusetts; Psychiatry and Neurology: Herbert Spencer Ripley, M.D., Seattle, Washington; Radiology: Arthur Bradley Soule, Jr., M.D., Burlington, Vermont; Surgery: Richard Kennedy Gilchrist, M.D., Chicago, Illinois; Thoracic Surgery: Henry Swan, M.D., Denver, Colorado; Urology: Charles Riser, M.D., Atlanta, Georgia.

## Pennsylvania Academy of Physical Medicine and Rehabilitation

A round table discussion on cerebral palsy was presented by the Academy with the following participants:

Temple Fay, M.D., on diagnostic screening.  
Fred H. Allen, M.D., on child guidance.  
Edgar A. Doll, Ph.D., on psychometric evaluation.  
Georgiana Peacher, Ph.D., on speech therapy.  
Bernard C. Gettes, M.D., on relationship of the eyes.  
Albert A. Martucci, M.D., on physical medicine and rehabilitation.  
Harold Lefkoe, M.D., moderator.

## Southern California Society of Physical Medicine and Rehabilitation

At the regular March meeting of the Society, the theme was "The Value of Physical Medicine Methods in General Practice." Speakers and their papers were as follows:

Albert Marinacci, M.D., Diagnostic Value of Electromyography in General Practice.  
Louis Biro, M.D., Diagnostic Value of Chronaxie and Skin Resistance Tests in General Practice.  
E. C. Christensen, M.D., Diagnostic Value of Gibbon-Landis, Cold Pressor and Oscillometric Tests in General Practice.  
Fred B. Moor, M.D., Diagnostic Value of Physical Medicine Procedures in the Arthritic Patient.

For the regular meeting, Dr. L. J. Yarns presented the subject "Physical Care of the Industrial Traumatic Hand"; Dr. Harvey E. Billig, "Orthopedic and Surgical Problems of the Upper Extremity and Hand" and Dr. Rene Caillet discussed "Early Treatment of the Hemiplegic Arm."

## The National Foundation for Infantile Paralysis Expresses Appreciation

To the Editor:

On behalf of the National Foundation for Infantile Paralysis and the thousands of American families who support its fight against infantile paralysis, I want to thank the fine men and women in the various branches of the medical profession who served poliomyelitis patients so willingly and competently during 1950, the second highest year of polio incidence in the history of the United States.

The doctors, nurses, physical therapists, non-professional and volunteer hospital personnel—all who make up the polio medical team—deserve our warm tribute. They are the ones, in the final analysis, who can give the poliomyelitis patient the thing he seeks: an opportunity to return to his family and to his community a whole person. Through his acute illness and through the long re-education and rehabilitation period needed by the severely handicapped, the polio patient needs not only the skill of each member of the medical team, but also their personal interest, the strength of their encouragement, the understanding of his own problem which only they can give him. Unstintingly they have given this service to the poliomyelitis patient.

The American people who support the National Foundation make possible its program of providing financial aid to needy polio patients and of supplementing existing polio facilities and personnel in communities hit by epidemic. We can be successful, however, only in proportion to the cooperation we receive from hospitals and the many and varied personnel needed to serve the



polio patient. Without their help we would not have been able to meet the heavy onslaught of polio in these past few years.

The National Foundation for Infantile Paralysis is deeply grateful to all those whose services helped to bring to each poliomyelitis patient his full chance for recovery.

BASIL O'CONNOR,  
President.

#### Grant to Northwestern

The National Foundation for Infantile Paralysis has approved a grant of \$9,354.00 to Northwestern University to support the educational program of the school of physical therapy under the direction of Dr. Stafford L. Osborne, professor of physical medicine. The grant effective July 1st, 1951, is to help support basic and postgraduate instruction in physical therapy. Dr. Emil Hauser is medical director and Miss Gertrude Beard, technical director of the school.

#### Chicago Society Physical Medicine and Rehabilitation Elects Officers 1951-1952

President—Charles O. Molander, M.D.  
Vice President—Arthur A. Rodriguez, M.D.  
Secretary-Treasurer—Milton G. Schmitt, M.D.  
Board of Trustees—Gusta Davidson, M.D., to serve three years.

The Board of Trustees consists of the active officers and three elected members, one to be elected each year. In addition to Dr. Davidson, Dr. Worley Kendell will serve for two years, and Dr. Disraeli Kolak for one year.

The members of the Committees are as follows:

##### Committee on Education—

Irvin F. Hummon, Jr., M.D., Chairman  
Arthur A. Rodriguez, M.D.  
Joseph Koczur, M.D.

##### Membership Committee—

Milton G. Schmitt, Chairman  
Harold R. Weinzimmer, M.D.  
Harriet M. Clark, M.D.

##### Program Committee—

Maxwell D. Flank, M.D.  
H. Worley Kendell, M.D.  
Thomas Y. Oester, M.D.

#### American College of Surgeons

The American College of Surgeons will hold its 37th annual Clinical Congress in San Francisco, November 5 to 9, 1951, with headquarters at the Fairmont Hotel and Civic Auditorium. The thirtieth annual Hospital Standardization Conference is scheduled to be held concurrently, with meetings in the Civic Auditorium, as a part of the Congress. Dr. Arthur W. Allen of Boston is Chairman of the Board of Regents of the College; Dr. Henry W. Cave of New York is President; Dr. Alton Ochsner of New Orleans is President-elect and will be installed as President on

November 5; Dr. Paul R. Hawley of Chicago is the Director. Dr. Emile Holman is Chairman of the San Francisco Committee on Arrangements. The hospital conference program is in charge of Dr. Paul S. Ferguson, Acting Assistant Director in charge of Hospital Standardization.

#### Cleveland Society of Physical Medicine and Rehabilitation

The recently organized Cleveland Society of Physical Medicine and Rehabilitation has elected the following officers: President, Dr. Shelby G. Gamble; Vice President, Dr. Harry T. Zankel; Secretary-Treasurer, Dr. Bert A. Treister. Along with the above-named, Dr. Roswell Lovry, Dr. Walter M. Solomon and Dr. Walter J. Zeiter will serve on the Board of Trustees.

#### Poliomyelitis Research Grant

The University of Louisville School of Medicine has been awarded \$7,700 for poliomyelitis research, reportedly the first grant ever given an institution in Kentucky by the National Foundation for Infantile Paralysis. The research will be conducted by Dr. Alex J. Steigman, professor of child health at the University of Louisville School of Medicine.

#### Advisory Committee on Education

The Board of Trustees of the American Medical Association approved a grant of \$2,000 for a conference of the Advisory Committee on Education of the Council on Physical Medicine and Rehabilitation.

#### Studies in Multiple Sclerosis

A grant has recently been made by the National Multiple Sclerosis Society to the H. L. Snyder Memorial Research Foundation, Winfield, Kan., for biochemical studies in multiple sclerosis in the amount of \$15,507 for one year. Dr. Harold H. Jones, director and vice president of the foundation, will serve as director of research for the project. The biochemical studies to be made are those involving blood and urine.

#### Major General Grant to Direct Red Cross Blood Program

Maj. Gen. David Grant, U.S.A.F. retired, surgeon-general of the Air Force during World War II, has been appointed director of the National Blood Program of the American Red Cross effective May 1, succeeding Dr. G. Foard McGinnis, resigned. Dr. Ross T. McIntire will continue to serve as chairman of the blood program Medical Policies and Procedures Committee. Dr. Russell L. Haden, who has been serving as medical director, will become associate director and will be responsible for medical phases of the program. Dr. Grant will direct all phases of the Red Cross Blood Program and be responsible for the further extension of the program to meet increased military and civil defense needs.



### New Jersey Society of Physical Medicine

At the regular monthly meeting for May, of the New Jersey Society of Physical Medicine, Dr. Allen Russek was the speaker. The meeting was held in the Haddon Hall Hotel, Atlantic City.

### New Journal, Neurology

A new journal, *Neurology*, began publication with its January-February issue as the official publication of the American Academy of Neurology. Its editorial scope will include diseases of the nervous system, neuropathology, neurosurgery, neuroanatomy, neuropsychiatry and neurophysiology. Dr. Russell N. De Long, Ann Arbor, Mich., is editor and Dr. Webb E. Haymaker, Washington, D. C., associate editor. *Neurology* is under the editorial guidance of the academy's board of editors. The first 98 page issue contains 8 scientific articles, sections called "Treatment Review," "Clinical Pathologic Conference" and "Book Reviews," and an editorial page. The journal may be obtained at the U. S. subscription rate of \$8 per year, foreign rate \$9 per year, from *Neurology*, 84 South 10th Street, Minneapolis 3.

### The Kappa Delta Award for Research in Orthopaedic Surgery

A prize of \$1,000.00 donated by the Kappa Delta Sorority may be awarded annually by the American Academy of Orthopaedic Surgeons for the best research related to Orthopaedic Surgery and performed in the United States of America. This research must be presented to the Committee on Scientific Investigation of the American Academy of Orthopaedic Surgeons before November 1, 1951. Researchers interested in competing for this prize are requested to secure further information from Dr. Austin T. Moore, Gervais and Pickens Streets, Columbia 5, South Carolina, Chairman of the Award Committee for 1951.

### Summer Workshops Scheduled

Twelve specialized workshops designed for special teachers, therapists, administrators and others directly engaged in crippled children's work, will be held at universities and colleges throughout the country this summer, according to an announcement by the National Society for Crippled Children and Adults.

Workshops in special education, social service, psychology, and cerebral palsy, in addition to special training courses at which staff members of the National Society will lecture, mark the intensive sum-

mer training courses. These workshops will be joint projects of state crippled children's societies and the university or college where they are held. State medical societies, public and other private agencies are also cooperating. National Society staff consultants are directing the planning and will participate as speakers.

Demonstration classes of crippled children will be part of a number of the workshops in order to give teachers and others an opportunity to observe and work with crippled children.

Special education workshops will be held at the University of Utah, Salt Lake City; University of Wyoming, Laramie; Eastern Montana College of Education, Billings; and the New Haven State Teachers College, New Haven, Conn.

Cerebral Palsy workshops will be conducted at Michigan State Normal College, Ypsilanti; Syracuse University's School of Education, Syracuse, N. Y.; and Teachers College, Columbia University, New York City.

Further information concerning these workshops may be obtained from the state society for crippled children of the state in which the course will be held, or from the program services of the National Society for Crippled Children and Adults, 11 South La Salle Street, Chicago 3, Ill.

### State Legislation

#### Bills Introduced

**New Mexico.** — S.130, proposes regulations for the licensing and registration, by the secretary of state, of persons desiring to practice **physical therapy**, which is defined to mean the treatment of patients by physical means including various modalities of electricity, heat, massage, exercise and water.

**New York.** — A.1878, to amend the law relating to **physiotherapists**, proposes to authorize such persons to use roentgen ray or x-ray.

**Connecticut.** — H. 1226 and S. 632 propose the creation of a state board of examiners for **physical therapists** and define physical therapy to mean the treatment of any bodily or mental condition of any person by the use of the physical, chemical and other properties of heat, light, water, electricity, massage and therapeutic exercise, which includes posture and rehabilitation procedures. The use of roentgen rays and radium for diagnostic and therapeutic purposes and the use of electricity for surgical purposes including cauterization are not authorized by the proposals. A physical therapist would be a person practicing physical therapy under the prescription, supervision and direction of a person licensed to practice medicine and surgery.

**North Carolina.** — H. 913, was ratified April 11, 1951. It provides for the creation of a state **examining committee of physical therapists** and defines physical therapy as the treatment of any bodily or mental conditions of any person by the use of the physical, chemical, and other properties of heat, light, water, electricity, massage, and therapeutic exercise, which includes posture and rehabilitation procedures. The use of roentgen rays and radium for diagnostic and therapeutic purposes, and the use of electricity for surgical purposes, including cauterization, are not authorized under the term "physical therapy."



## BOOK REVIEWS

**CURRENT THERAPY, 1951. LATEST APPROVED METHODS OF TREATMENT FOR THE PRACTICING PHYSICIANS.** Editor, *Howard F. Conn, M.D.* Consulting Editors: M. Edward Davis; Vincent J. Derbes; Garfield G. Duncan; Hugh J. Jewett; William J. Kerr; Perrin H. Long; H. Houston Merritt; Paul A. O'Leary; Walter L. Palmer; Hobart A. Reimann; Cyrus S. Sturgis; Robert H. Williams. Cloth. Price, \$10.00. Pp. 699. W. B. Saunders Company, 218 W. Washington Square, Philadelphia 5, 1951.

This is the third in the series of annual volumes on therapy. This edition contains the contributions of 275 American authorities on more than 340 diseases and disorders. The emphasis is on therapy — with only a line or two on the description of the disease if necessary. In several instances the methods of one or more clinicians are given. The method of presentation is ideal for quick reference — words are kept to a minimum, exact dosages for drugs are given and the practical and complete management of the patient is included. The busy practitioner who wishes to know the very latest methods of treatment will find this volume invaluable.

**THE BRITISH MEDICAL BULLETIN, VOL. 7, "INDUSTRIAL HAZARDS."** Paper. Price, \$2.00. Pp. 143 with illustrations. Oxford University Press, 114 Fifth Avenue, New York 11, 1950.

The journal contains a symposium on some of the hazards found in industry. The first group of papers deals with various aspects of toxicology such as metals, silicon, fluorine, the synthetic insecticides and the cyclic hydrocarbons. Another paper considers the more important occupational skin diseases. The radiation syndrome is discussed in two papers. The last group of papers deals with injuries, accidents and the prevention of sepsis in industry.

**INJURIES TO THE ANKLE.** By *J. Grant Bonnin, M.B., B.S.* (Melbourne); *F. R. C. S.* (England). Orthopedic Surgeon, Central Middlesex Hospital, late Orthopedic Registrar, West London Hospital; Acting Registrar, Royal National Orthopedic Hospital; Orthopedic Surgeon, E. M. S. White Lodge Hospital; Lieutenant-Colonel, R. A. M. C.; Orthopedic Adviser, South East Asia Command; Hunterian Professor, Royal College of Surgeons. First Edition. Cloth. Price, 97s. Pp. 405 with illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1950.

Here is a book devoted only to the ankle and the structures about it. This volume is concerned chiefly with fractures and other traumatic conditions. The treatment recommended in most instances is surgery.

The opening chapter on historical survey is interesting and the chapters on anatomy and the mechanism of fractures are well done.

**SELF-HELP DEVICES FOR REHABILITATION.** New York University-Bellevue Medical Center. Institute of Physical Medicine and Rehabilitation. Third Report in the series, containing information on a variety of devices. Loose leaf. Illustrated. Institute of Physical Medicine and Rehabilitation, 400 East 34th Street, New York 16, N. Y.

Handicapped persons should be most grateful to Dr. Rusk and his departments for issuing these booklets. Bringing this information to the personnel in departments of physical medicine is a means of extending the use of these aids to the many who so badly need them. This is the third in the series illustrating the self-help devices. They are simple, inexpensive devices that are most practical. Dr. Rusk is supplying a real service in distributing this series of booklets gratis to those interested.

**PEPTIC ULCER.** By *A. C. Ivy, Ph.D., M.D., D.Sc., LL.D.Sc.* Vice-President of the University of Illinois in Charge of Chicago Professional Colleges; Distinguished Professor of Physiology; Chairman of the Department of Clinical Science. *M. I. Grossman, Ph.D., M.D.,* Associate Professor of Physiology in the Department of Clinical Science, University of Illinois College of Medicine, and *William H. Bachrach, Ph.D., M.D.,* Research Associate in Physiology, University of California School of Medicine; Formerly Assistant Professor of Clinical Science, University of Illinois College of Medicine. Cloth. Price, \$14.00. Pp. 1144, 137 illustrations, 210 tables. The Blakiston Company, 1012 Walnut Street, Philadelphia 5, 1950.

This is truly a monumental book. Doctor Ivy and his co-authors have prepared a volume that will be a classic for many years to come. The name of Doctor Ivy is so intimately associated with the study of peptic ulcer that it is only logical that he should furnish this book. If by any chance his reputation needed further acclaim, this volume will certainly add further laurels.

This book is divided into four sections — introduction to the problem of peptic ulcer which considers the basic topics, the pathogenesis based on experimental, autopsy and clinical observations, the diagnosis and treatment both medical and surgical. It is crammed with a tremendous amount of material which is presented in an orderly and lucid manner. Each chapter is concluded with a summary and a complete bibliography. It represents the results of years of research and clinical experience plus a prodigious amount of reading. In the preface, it is



stated that Doctor Bachrach, in preparation for his Ph.D. thesis began to accumulate the material in 1935 which was the beginning of the book. In 1941 Doctor Grossman began to prepare the material for publication and it is not until Doctor Ivy with the help of a number of graduate students that the volume finally appeared at this time. Thus their perseverance and indefatigable efforts finally produced the enormous amount of information.

Anyone who wishes to learn all that is worth while knowing about this most important problem will wisely start with this book.

**A HISTORY OF MEDICINE.** By *Henry E. Sigerist, M.D., D.Litt. LL.D., Dr.h.c., Research Associate in the History of Medicine, Yale University.* Volume I: Primitive and Archaic Medicine. Cloth. Pp. 564. Price, \$8.50. Oxford University Press, 114 Fifth Avenue, New York 11, 1951.

This is the first of a prospective eight volumes on the history of medicine. The aim is to place medicine in proper relation to general history to aid in correct interpretation. To do this the writer obviously had to have a background of years of historical research into global events as well as that of the medical sciences.

The present volume deals with primitive and archaic medicine. It is well documented by numerous references as well as selected illustrations. The style of writing is unusually readable for such compact writing. Print, paper and binding are excellent. A desirable addition to the library of all collectors of important medical literature and fascinating reading for lovers of history.

**LOGAN CLENDENING LECTURES ON THE HISTORY AND PHILOSOPHY OF MEDICINE. FIRST SERIES. I: VESALIUS FOUR CENTURIES LATER. II: MEDICINE IN THE EIGHTEENTH CENTURY.** By *John Farquhar Fulton, Sterling Professor of Physiology and Keeper of Medical History Collections, Yale University, New Haven.* Cloth. Price, \$1.00. Pp. 52, with portrait. University of Kansas Press, Lawrence, Kansas, 1950.

It is always a pleasure to read Dr. John Fulton's authoritative and interesting dissertations on medical history. This small monograph dealing with two phases of medical history is particularly entertaining. In the first section dealing with the life of Vesalius, Dr. Fulton describes in his usual pleasing style the life and inspiring activities of Vesalius. Fulton concludes that the work of Vesalius "illustrates the importance of an open mind and a healthy skepticism about anything set down in books as scientific truth."

The second section on medicine in the eighteenth century is divided into three parts. One is on physiology which deals with the contributions of Harvey, Malpighi, Robert Boyle, Isaac Newton, Stephen Hales, Priestley and Lavoisier. The second section of Part II deals with pathology and discusses chiefly the contributions of Morgagni. The final section of Part II on internal medicine discusses in delightful fashion the contribu-

tions of Sydenham, Boerhaave, Withering and Jenner. Fulton has pointed out that the contributions of these great men served as the foundation for others even more important in the next century in the sphere of metabolism, in cellular pathology, and in clinical fields.

A thorough knowledge of the history of medicine is essential to students of medicine who wish to know the background of their field in order to comprehend its present status. Dr. Fulton's charming monograph is a delightful contribution to our understanding of the history of medicine.

**YOUR BODY: HOW TO KEEP IT HEALTHY.** By *John Tebbel.* With introduction by *Morris Fishbein, M.D.* Cloth. Price, \$2.95. Pp. 233. Harper & Brothers, 49 E. 33rd St., New York 16, 1951.

This book offers advice on food, the eyes and ears, the skin, exercise and posture, work and play, the hair, the month, tobacco and alcohol, posture, colds, sex, mental hygiene, and longevity. The chapter on tobacco and alcohol is excellent and the one on sex is probably the best. Although the book has been "authenticated" by a well known physician, it is not free from minor errors and obscurities, and the author needs to be reminded that a given proposition is not disproved, at least to a critical reader, simply by referring to it as a superstition. The proof or disproof requires the painstaking collection of facts of observation or experiment. Recognition of this truth would enable the author to improve his material on posture, for instance, and to correct his overemphasis of relaxation. It is to be hoped that these defects may be remedied, in a future edition, without spoiling the cheerful tone which is the attractive feature of this book.

**VITAMINS AND HORMONES. ADVANCES IN RESEARCH AND APPLICATIONS.** Edited by *Robert S. Harris, Professor of Biochemistry of Nutrition, Massachusetts Institute of Technology, Cambridge, Mass., and Kenneth F. Thimann, Professor of Plant Physiology, Harvard University, Cambridge, Mass.* Vol. VIII. Cloth. Price, \$6.80. Pp. 342, with illustrations. Academic Press, Inc., 125 East 23rd Street, New York 10, 1950.

This volume contains eight reviews of special topics in the fields of nutritional and endocrine biochemistry, namely, vitamin B<sub>12</sub> and the animal protein factor, pyridoxine and fat metabolism, the antistiffness factor, vitamins and metabolism in the mold *Neurospora*, the physiology of relaxin, interactions between estrogens and progesterone, certain hypophyseal hormones, and the structural chemistry of the steroids. All of these subjects have great potential significance in medicine, and the reviews are written in fascinating style; the astonishing wealth of laboratory results being well organized into coherent presentations. While the book will be most useful to those engaged in research, many physicians will find it of interest as indicating the directions in which medical science is developing.



**PHYSICAL EXAMINATION IN HEALTH AND DISEASE.** By *Rudolph H. Kampmeier, M.D.*, Associate Professor of Medicine, Vanderbilt University School of Medicine; Visiting Physician to Vanderbilt University Hospital; Chief of the Medical Outpatient Service, Vanderbilt University Hospital, Nashville, Tenn. Cloth. Pp. 821, with 550 illustrations, one in color. Price, \$8.00. F. A. Davis Company, 1914-16 Cherry St., Philadelphia 3, 1950.

This book represents something new and better in medical texts. The first thing which is striking about it is the large number of excellent photographs and diagrams. This is very appropriate as inspection comprises such a valuable portion of physical diagnosis and can best be taught by visual means. Well conceived diagrams are also used when possible to illustrate physical findings such as obtained by percussion and auscultation. Normal conditions are contrasted with those found in disease together with some illustrative pathologic and x-ray material especially in relation to the heart and lungs. This is done only to such extent as seems valuable to aid the student in memorizing and avoids too much confusing clinical medicine. The graduate physician, however, may become enthusiastic over the excellent collection of photographs of a wide variety of common and rare diseases. Recommended as a book to be considered by all teachers and students of physical diagnosis.

**THE SOCIAL AND BIOLOGICAL CHALLENGE OF OUR AGING POPULATION.** PROCEEDINGS OF EASTERN STATES HEALTH EDUCATION CONFERENCE, MARCH 31-APRIL 1, 1949. (Under auspices of New York Academy of Medicine.) Cloth. Price, \$2.75. Pp. 183, with illustrations. Columbia University Press, 2960 Broadway, New York 27, 1950.

The literature about gerontology and geriatrics has increased tremendously during the past few years. This subject has assumed a tremendous importance with the increase in life expectancy. The pessimistic viewpoint would question "whether the increased longevity is a blessing at all, and whether instead of referring to it as an increment in life expectancy, it should not rather be called a prolongation of existence."

The problems of the aging population have attracted the attention of the best minds in an effort to help find the solutions. This includes men in medicine, sociology, business, both the employer and the employee, education, psychology and numerous other fields. In this volume authorities from relevant fields have written chapters dealing with the problems of aging, and the ways and means for achieving the rapid progress of gerontological research, controllable factors in the processes of aging written by a pediatrician who aptly maintains the study of this problem should really start with the obstetrician and pediatrician, control of chronic diseases, psychological and sociological factors and others.

The book gives valuable information about the entire field. No attempt is made to give specific remedial or preventive measures — other books and articles have attempted this. In this volume the broad biological and social aspects are attempted and the net result is most stimulating.

**GERMAN-ENGLISH TECHNICAL DICTIONARY.** BASED ON DATA COMPILED BY THE U. S. AIR FORCE. Edited by *Kurt F. Leidecker, M.A., Ph.D.* In two volumes. Vol. I — A-K; Vol. II — L-Z. Cloth. Price, \$17.50 a volume or \$35.00, both volumes. S. F. Vanni, 30 W. 12th St., New York 11, N. Y., 1951.

This dictionary contains the official translation of scientific terms found in the secret documents captured by the Allies after the fall of Germany. Its terminology has been adopted in the official documents of the governments of both the United States and Great Britain and as a consequence by the industries of the two countries. The various branches covered include aeronautics; rocketry; space navigation; atomic physics; higher mathematics; jet engines; turbines; hydraulics; petroleum industry; civil and mechanical engineering; ballistics; electronics; radio; radar; aerophotography; television; infrared research; communication; meteorology; topography; aeromedicine and other specialized branches. All in all there are approximately 100,000 terms many not found in any other dictionary. There are incorporated terminology, abbreviations, symbols, and code words indispensable for research. The work represents a tremendous amount of work, and extreme care has been used in its compilation.

**ELEMENTS OF HUMAN PHYSIOLOGY.** By *Miriam Scott Lucas, B.S., Ph.D.*, Assistant Professor, Department of Biological Science, Michigan State College. Second edition. Cloth. \$4.75. Pp. 357, with 158 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1950.

This textbook of human physiology is written from the point of view of the student and teacher of physiology and not from the view point of a specialist. It is an excellent text for the pre-professional student who needs an elementary or introductory course in human physiology. This text would serve well in any college course of physiology.

As a result of added experience in teaching in the Basic College course in Biological Science this new edition has been considerably revised. Several chapters have been completely rewritten. Reading covering varying interests in related fields are listed at the end of each chapter.

The book is divided into four parts as follows: part one, movement and support; part 2, integration in the body; part three, metabolism and water balance; and part four, reproduction and endocrine function.

The material has apparently been selected with discretion and is well presented. The illustrations are unusually good and well chosen. The text is



written in clear and simple language. This text would prove of great value to schools of physical therapy. The volume is highly recommended.

**PRACTICAL PROCEDURES IN CLINICAL MEDICINE.** By *R. I. S. Bayliss, M.A., M.D., (Camb.), M.R.C.P.* Medical Tutor and Senior Medical Registrar, Postgraduate Medical School of London. Late Resident Assistant Physician and Medical Registrar, St. Thomas' Hospital, London. Cloth. Price, 25s. Pp. 445 with 62 illustrations. J. & A. Churchill, Ltd., 104 Gloucester Place, London, W. 1, England, 1950.

The title of this book may be misleading, particularly to American readers. It is a collection of various laboratory procedures together with their physiological basis and the clinical interpretation. The procedures are grouped according to the different system disorders plus chapters on examination of the blood, parenteral infusions and urine. A chapter on radiology in clinical medicine is very briefly covered and a chapter entitled "miscellaneous" includes everything from the aspiration of joints, post mortem weights, vaccination, posological tables (all in the best Latin), and others. Several British authors contributed the different chapters.

Because the terminology is British and the values for several determinations will vary from the normals found in this country, the book will be useful to British students.

**ANNUAL REVIEW OF PHYSIOLOGY.** Volume XIII. By *Victor E. Hall*, Editor, Stanford University; *Jefferson M. Crismon*, Associate Editor, Stanford University; *Arthur C. Giese*, Associate Editor, Stanford University. Fabrikoid. Price, \$6.00. Pp. 457. Annual Review, Inc., Stanford, California, 1951.

The 1951 Annual Review of Physiology lives up to its well earned reputation. Each of the subjects reviewed is undertaken by an expert in that particular field or discipline. Rare insight and discrimination is manifest in the selection of the subject matter presented by each reviewer. It is no small task. The editorial committee and editors deserve the gratitude of the busy physician for summarizing the most important contributions that enables one to keep abreast of current thought and research with a minimum of effort.

Last year the writing of a "Prefatory Chapter" was initiated. This year this chapter is written by the well known and eminent physiologist Carl J. Wiggers. He writes an excellent chapter on physiology from 1900 to 1920. It is a fascinating story simply and most effectively written. It is hoped that this chapter is read by those fortunate enough to secure the Annual Review of Physiology.

There are seventeen reviews and space will not permit a discussion of each of them. From the standpoint of physical medicine the most im-

portant subjects reviewed are: physiological effects of heat and cold by Grant of Stanford; muscle by D. K. Hill of London, England; peripheral circulation by Wakim of the Mayo Clinic; respiration by Gray and Grodins of Northwestern University; and conduction and transmission of nerve impulses by Bullock of the University of California. Other interesting chapters are somatic functions of the nervous system; electrical activity of the brain; and blood volume. Each chapter is followed by an excellent bibliography. There is also an adequate authors and subject index at the close of the book. The 1951 Annual Review of Physiology is highly recommended.

**THE PRINCIPLES OF HEREDITY.** Fourth Edition. By *Laurence H. Snyder, Sc.D.*, Dean of the Graduate College, The University of Oklahoma; Author of Blood Grouping in Clinical and Legal Medicine Genetics; Co-author of Genetics, Medicine and Man, Medical Genetics and Eugenics Frontiers in Medicine. Cloth. Price, \$4.75. Pp. 515 with illustrations. D. C. Heath & Company, 285 Columbus Avenue, Boston 16, 1951.

This new edition brings up to date the latest developments in genetics. The advances made during the past five years made a new edition necessary. This fourth edition incorporates the significant genetic advances that have been made recently in the areas of agriculture, biochemical genetics, radiation genetics, physiological genetics, population genetics, cytogenetics, the genetics of microorganisms and human and medical genetics.

A new chapter discusses the new theory of gene which was brought about by the rapidly developing knowledge of cytoplasmic inheritance. Other chapters present new material on genetics of domestic animals, blood grouping, the H<sub>r</sub> antigens and other antigens, the latest information on chemical antigens and the recent findings concerning the genetic effects of radiation, both in experimental organisms and in man. Many other chapters have been revised and modernized. Anyone requiring a volume that gives the facts and principles of inheritance in a simple and direct manner will find this book most worth while.

**A CLASSIFIED BIBLIOGRAPHY OF GERONTOLOGY AND GERIATRICS.** By *Nathan W. Shock*, Chief, Section on Gerontology, National Heart Institute, National Institutes of Health and Baltimore City Hospitals. Cloth. Price, \$15.00. Pp. 599. Compiled in fourteen languages. Stanford University Press, Stanford, California, 1951.

This work includes over 18,000 references in fourteen languages. The references have been classified in small sub-groups, so that each contains less than 150 items. The major divisions are gerontology, general orientation, biology of the aged, organ systems, geriatrics, psychological process, social and economic aspects and miscellaneous. An exhaustive search was made to locate any material that is related to this subject and which has been published since 1940.

This book should be of much help to research workers or writers who need a well indexed and catalogued source of reference.



## PHYSICAL MEDICINE ABSTRACTS

**Effect of Exercise on Circulatory Dynamics of Normal Individuals.** L. Dexter; J. L. Whittenberger; F. W. Haynes; W. T. Goodale; R. Gorlin, and C. G. Sawyer.

J. Applied Physiol. 3:439 (Feb.) 1951

The effect of exercise on cardiac output and pressures in the pulmonary artery has been reported by Hickam and Cargil and by Riley et al. This paper confirms many of their findings and in addition describes the pressure-flow relationships of both the right and the left ventricles, the work load of both ventricles, and the resistances offered by the pulmonary and systemic circuits. It also presents control data for observations in pathological states to be reported in subsequent communications.

Studies of cardiac output and pulmonary arterial and "capillary" pressure were performed in 7 normal individuals at rest and during exercise in the recumbent position. All showed an increase of cardiac output and arterio-venous oxygen difference. At oxygen consumption exceeding 400 cc/minute/m.<sup>2</sup> body surface a rise of pulmonary arterial pressure, negligible rise of pulmonary "capillary" pressure, widening of the PA-PC mean pressure gradient and no significant change of pulmonary arteriolar resistance occurred. Pressure-flow relationships in both left and right ventricles have been analyzed. Work of the right ventricle against pressure increased about threefold and that of the left ventricle about two times over the resting levels when exercise produced an oxygen consumption of 500 cc/minute/m.<sup>2</sup> body surface.

**Concept of "Acceptance" in Physical Rehabilitation.** Morris Grayson.

J. A. M. A. 145:893 (March 24) 1951.

The purpose of this paper is to emphasize and elucidate the psychodynamic aspects of the concept of acceptance as it is applied to physical rehabilitation. Acceptance as it is commonly seen appears to be only a symptom but is in reality part of a greater complex that is within the realm of the total personality of the individual. The psychodynamic significance of acceptance is unfortunately too often abbreviated. Expressions such as "willingness to be rehabilitated" or "cooperativeness," while expressing in part the symptomatology of acceptance, do not give the real picture or cast any light on the psychological problem that any disabled person faces.

The psychodynamics of acceptance involves two processes: (a) psychobiologic incorporation (the body image) and (b) social integration (the reality principle). All workers in rehabilitation are

familiar with the many so-called obstacles that a disabled person has to hurdle in order to effect rehabilitation.

Acceptance and rehabilitation can take place without a physician's aid, but in many cases a center of rehabilitation is necessary. A psychiatric team functions directly by psychotherapy to the patient and indirectly by education of other workers in the rehabilitation team to the individual psychological needs of the patient.

**The Indiana Planning Committee for Polio.** LeRoy E. Burney.

Hospitals 25:39 (March) 1951.

The State Polio Planning Committee was established as a temporary expedient in an emergency, but it worked so well, both as a planning and an action group, that all representatives requested it continue on a permanent basis.

Some of the accomplishments of this committee were (1) a closer integration of all groups, voluntary and official, concerned with the diagnosis, care, treatment and rehabilitation of poliomyelitis cases; (2) an understanding of the services which each group had to offer; (3) an agreement upon uniform policies affecting the care and treatment of poliomyelitis patients and (4) general recommendations to the communities in the event of the recurrence of poliomyelitis. This committee demonstrated that voluntary and official health agencies, the medical profession, the hospital administrators and others concerned with problems relating to poliomyelitis can work together effectively for the best interests of the patient, the community and the state.

**Obstetrical and Gynecological Aspects of Backache.** Robert F. Lamar.

Indust. Med. & Surg. 20:19 (Jan.) 1951.

Backache in pregnancy is an extremely common complaint and, while its nature is most often orthopedic, the obstetrician usually is called upon for palliation. The increase in abdominal content causes a shift in the center of equilibrium in the pregnant woman that is of such a degree as to require increasingly exaggerated postural adjustments. Joint strain low in the back is an obvious concomitant and therapy aimed at approaching a more normal body posture is of value. Simple instruction as to standing straight and habitually holding the buttocks together so as to increase abdominal tone may help considerably. High and narrow shoes should be replaced, and a hard bed is helpful. Local heat is a useful measure in the more severe cases, some of which may require adhesive strap support.



**Respiratory Failure in Poliomyelitis: A Simple Method for Its Recognition and Control.** Walter F. Stafford, Jr., and Ramsdell Gurney.

Ann. Int. Med. 34:203 (Jan.) 1951.

A simple, graphic method of evaluating certain aspects of respiratory function in poliomyelitis is presented. By the use of this method it is possible to anticipate respiratory failure before it is evident clinically. The necessity for measuring tidal and minute volumes during artificial respiration is emphasized. During artificial respiration, pulmonary complications can be demonstrated by this method before any recognizable clinical signs are present. This method gives a satisfactory indication of return of respiratory function and serves as a guide for evaluation of the patient's ability to withstand removal from the respirator.

**Strength of Healing in Tendons of Denervated Muscles.** Benjamin F. Lounsbury.

Quart. Bull. Northwestern Univ. M. School 25: 47 (Spring) 1951.

Lacerations of tendons occur relatively frequent among the injuries sustained by men who work with their hands. Such wounds, often seemingly trivial, usually not spectacular, may rob a man of his means of livelihood. One of the most important investigations of tendon healing within recent years was carried out by Mason and Allen. They produced experimental evidence to show that the tensile strength of healing tendons is greatly enhanced by permitting some function of those tendons in the later stages of their healing.

The experiments performed in this study have demonstrated the effect of tonus on the tensile strength of healing tendons. They also have demonstrated the changes which occur in a muscle following the division of its nerve supply and have shown the nature of the reparative process in the tendon of such muscle. From these demonstrations, the following conclusions have been drawn: If the tonic contractions of a muscle be abolished by denervation of the muscle, healing of its tendon following primary suture is appreciably weakened. The tensile strength of the "denervated" healing tendon may be restored to that of the healing tendon of a normal muscle by restoring the pull of tonic contractions on its proximal stump. Passive movement of a healing "denervated" tendon greatly increases its strength.

**The Problem of Gout.** George R. Dillinger.

J. M. A. Georgia 40:114 (March) 1951.

Gout is probably one of the most neglected disease syndromes in the field of American medicine, yet is one of the oldest diseases known to man. The treatment of an acute attack of gout, after recognition, usually is a simple matter. Very few articular diseases will respond so promptly. The affected part should be put at complete rest. Hot or cold wet compresses give some measure of relief. If the pain is too severe, morphine or codeine should be used. Most authorities agree

upon the treatment for acute gout, but there is some disagreement concerning the interval treatment or management between attacks. Some feel that moderate dietary restriction and avoidance of the use of alcohol is all the treatment indicated. The majority, however, feel that the gouty state can be combatted and the development of deforming arthritis checked by a definite treatment regimen, consisting of (1) moderate living, with adequate rest; (2) a low purine, low fat diet; (3) colchicine, and salicylates with alkali, and (4) abstinence from alcoholic beverages. This treatment also is useful after gouty arthritis has developed. In addition, heat and moderate massage with active and passive joint activity should be used.

**The Differential Diagnosis and Treatment of Unilateral Neck, Shoulder and Arm Pain.** C. C. Coleman; J. M. Meredith, and C. E. Troland.

South. Med. & Surg. 113:8 (Jan.) 1951.

In most patients the treatment of subacromial bursitis by novocaine injection of the bursa, diathermy applications and excision of the inflamed sac by the orthopedist in severe intractable cases afford relief, if not complete cure. If the bursitis is severe, limitation of movement of the shoulder and pain are most noticeable when the shoulder is abducted or rotated internally.

**The South's Service to the Crippled Child.** William Littell Funkhouser.

South. M. J. 44:124 (Feb.) 1951.

The United States Census Bureau in 1944 estimated that there were over forty-six million persons in this country under 20 years of age. One-third are in the southern states. It is almost impossible to determine the number of children in the United States eligible for crippled children service, but it has been estimated at twenty-six and a half million.

Federal grants for the Crippled Children Services are to be doubled for 1952. The increased grants will be used to extend present services to reach more children, care for handicaps where no public service is available, and to train more workers. It will also help to cover the increased cost of hospitalization which has risen in 10 years from \$6.42 to \$18.06 per day per patient.

The program in the various states does not operate under the same state agency. Nine states function under the Department of Health; three operate under the Department of Public Welfare; two under the Department of Education; two under Children's Commission, and one under the Department of Public Assistance.

Every state and the District of Columbia has service for children with orthopedic and plastic defects, also for cerebral palsy and congenital abnormalities.

Eight states care for congenital hearts; nine have programs for rheumatic hearts; three states care for speech and for hearing; five states serve the blind; two, mental defects, and one, brain tumors. It can be seen that the majority of the



southern states care for only a small percentage of crippling conditions under the broader interpretation of the term. Of the medical personnel, all states have orthopedic, pediatric, and nursing service; nine have neurologists; three, plastic surgeons; four, dentists; one has a doctor of physical medicine, and six have cardiologists. Of the auxiliary personnel three states have a nutritionist; eight have teachers for speech therapy; fifteen have physical therapists; fifteen have medical social workers; and seven have a psychologist.

**The Use of Muscle Relaxants as an Aid in the Diagnosis and Therapy of Acute Low-Back Disorders.** Edward B. Schlesinger, and Frank E. Stinchfield.

J. Bone & Joint Surg. 33-A:480 (April) 1951.

The choice between operative treatment and protracted conservative treatment is often difficult. It is most discouraging to confine a patient to bed for long periods of time and subsequently be forced to abandon such treatment for operation. If one has reliable information upon which to predicate a good result with conservative treatment, it is much easier to be convincing about traction, protracted bed rest, physical therapy and braces. On the basis of the statistical analysis of results with the myanesis-relaxant test, it seems proper to offer this technique as an addition to the diagnostic and prognostic armamentarium.

Although the effects of myanesis are evanescent, the muscle relaxation initially gained in minutes may hasten the response to more traditional forms of therapy. In some cases, although the effect of the injection is ephemeral, the symptoms and signs abated, and did not return with similar severity. This is likewise seen on occasion after many forms of nonspecific therapy of the low back, such as novocain injection, diathermy, and ethyl-chloride spray. Nevertheless, a drug which can afford safe, repeated specific muscle relaxation should be a most valued tool for the orthopedic surgeon.

A series of patients with acute low-back and radicular pain were studied before and after the injection of myanesis. It was found that pain and limitation of motion of the limb could be altered with gratifying symptomatic relief. In certain instances this response persisted and, when followed by conservative treatment, led to long-term cure. In others there was an abrupt return of pain and limitation of motion as soon as the drug concentration dropped below therapeutic levels. Such patients invariably failed to respond to conservative treatment and eventually came to operation.

The correlation of test response to the drug and prognosis was sufficiently striking in a series of sixty-four patients to warrant discussion as a possible clinical test. In the first group of cases (good response), a high percentage of patients left the hospital symptomatically well after a period of conservative treatment. The group characterized by no response or a rapid return of signs and symptoms immediately after injection

quite generally failed to respond to any period of conservative management. Their operative records reveal evidence of root compression of such degree as to make conservative attempts at decompression unfeasible.

**Fractures of the Anterior Process of the Calcaneus.** Moses Gellman.

J. Bone & Joint Surg. 33-A:382 (April) 1951.

It is believed that fractures of the anterior process of the calcaneus are relatively rare or are frequently overlooked. The manner in which this fracture is sustained may vary, but the cause is commonly believed to be forcible adduction of the fore part of the foot, combined with plantar flexion.

With the discovery of the fracture, appropriate treatment should be instituted. Gross displacement may be corrected by manipulation. A simple below-the-knee cast gives comfort in the more severe cases; an elastic bandage is sufficient in the less severe cases. No weight-bearing is permitted for four weeks, when physical therapy is begun. The disability is likely to last longer than anticipated; accordingly, it is wise to warn patients at the outset that their convalescence will be slow.

**An Improved Type of Arthroplasty of the Hip Joint.** Anthony F. DePalma.

J. Bone & Joint Surg. 33-A:437 (April) 1951.

This type of arthroplasty is an extensive surgical procedure. It should be employed only in those patients with relatively good general physical fitness, who have the willingness to cooperate fully after the operation. It is primarily designed for cases of non-union with necrosis of the head of the femur and absorption of the femoral neck. However, as previously noted, this arthroplasty has given excellent results in cases of osteoarthritis of the hip joint; and there is reason to believe that it will give equally good results in patients with arthritis following Legg-Perthes disease, slipped femoral epiphysis, and fracture-dislocation of the hip joint.

If all details of the outlined procedure have been meticulously carried out, the stability of the hip will be such that no plaster fixation is needed postoperatively. The extremity is placed in an apparatus to hold it in balanced suspension; active motion is started on the first postoperative day. In the apparatus the extremity is flexed 25 to 30 degrees at the hip, abducted 45 degrees, and flexed 15 to 20 degrees at the knee. The toes and patella point straight upward.

As stated previously, motion at the hip and knee is started at once on a regulated schedule; physical therapy in the form of heat, massage, and quadriceps exercises is given daily. At the end of six weeks the patient is allowed up on crutches with an elevated shoe on the opposite foot and is told to swing the affected leg in all directions. No weight-bearing is allowed on the extremity until there is roentgenographic evidence of good



bony union at the osteotomy site, a period of 12 to 16 weeks. With the return of good muscle control, the crutches are discarded in favor of a cane.

**Cardiovascular Manifestations in Acute Poliomyelitis.** Louis Weinstein, and Alexis Shelokov.

New England J. Med. 244:281 (Feb. 22) 1951.

Abnormalities of the electrocardiogram occur frequently in the acute phase of poliomyelitis. Their appearance is associated with the severity of the infection, and not with the age of the patients.

Acute pulmonary edema is common in fatal cases of the bulbar forms of poliomyelitis. Careful management of fluid intake in patients with bulbar disease is necessary; intravenous hydration is probably best avoided. Myocarditis occurs in poliomyelitis. The mild form is probably hypoxic in origin, whereas the severe form may be due to invasion of the heart by the virus. Sterile verrucous endocarditis may occur in poliomyelitis. The problem of the cardiovascular disturbances in poliomyelitis needs further study. Of particular interest is the eventual fate of patients with cardiac abnormalities who survive an attack of this disease.

**Electromyography.** Charles D. Shields, and John H. Kuitert.

U. S. Armed Forces M. J. 2:465 (March) 1951.

Clinical electromyography is the recording and interpretation of voltage discharges generated by voluntary muscle. The motor unit which consists of a motor cell, its axon process, and the group of muscle fibers which this one cell innervates is the basic unit of study. It is studied indirectly by direct examination of its muscle component. Voltages generated in the muscle are amplified and recorded for visual and sound reproduction by a cathode ray oscilloscope with audio attachment. The amplified, record voltages have definite characteristics which are constant and permit interpretation. Electromyographic techniques are useful in the study of paralysis and skeletal muscles. The electromyographer must have a basic knowledge of neurology and must know the location of the muscle, its nerve supply and spinal root derivation.

**The Behavior of Residual Axons in Partially Denervated Muscles of the Monkey.** Mac V. Edds, Jr., and Wilfred T. Small.

J. Exper. Med. 93:207 (March) 1951.

In an effort to provide further evidence bearing on the validity of this suggestion, partially denervated muscles have been studied in a series of monkeys. The major aim of the investigation has been to determine whether or not the intact nerve fibers in paretic muscles of a primate behave similarly to those in other, previously studied mammals. The results obtained indicate that in the monkey, collateral regeneration of residual, intra-

muscular axons occurs only to a limited degree following slight denervation, and does not take place after marked denervation.

The attention currently devoted to "closed neurotomy," a method which is designed to enhance the recovery of paretic muscles by crushing them, might appear to gain some support from our results. Actually, neurotomy does not have this effect on the nerve fibers of either normal or partially denervated muscles of the rat.

Leg muscles of the monkey were studied following partial denervation produced by surgical elimination of from 25 to 90 per cent of the axons entering the sciatic nerve from the lumbosacral plexus. The investigation included observations on function, rate and degree of muscle atrophy, and neurohistological appearance of the affected muscles.

In most of the cases, from 83 to 90 per cent of the residual nerve fibers in the peroneal and tibial nerves were destroyed and a severe paresis of the leg muscles was produced. No functional improvement was noted up to 160 days after operation, and the affected muscles became markedly atrophic. Histological examination of these muscles failed to reveal more than sporadic collateral regeneration of the residual axons.

In two cases 50 and 75 per cent of the peroneal and tibial nerve fibers remained intact 63 and 80 days, respectively, after operation. The legs operated upon in these cases functioned almost normally and all muscles weighed within 11 per cent of those of the contralateral, normal leg. Nerve fiber ratios showed that many residual axons had regenerated collateral branches which entered denervated end-plates. Collateral regeneration was incomplete, however, and many end-plates remained without innervation. These results indicate that residual axons in paretic muscles of a primate do not regenerate collaterally as readily as do those of other previously studied mammals.

**Treatment of Fibrositis in the Neck and Shoulder with Microthermy (Radar).** George D. Wilson.

North Carolina M. J. 12:19 (Jan.) 1951.

Thirty-eight cases of fibrositis in the neck and shoulder (4 primary and 34 secondary) were successfully treated by exposure to microwaves (radar). The common triad of findings in this series of cases was: pain, hypotension and involvement of the sensory and motor nerves of the upper extremity. Objective criteria of recovery were restoration of full joint motion, as measured by goniometry; return of normal sensation over areas of paresthesia mapped out by pin scratch; and an increase in the power of the hand grip, as determined by a hand dynamometer. Microthermy was applied by director B at a distance of 2 inches from the bare skin. Treatments were directed to each side of the neck anteriorly and to the back of the neck, each site being exposed for ten minutes. Oral temperature was unchanged by thirty minutes' exposure to microthermy, and no burns or undesirable reactions were encountered.



# PRELIMINARY PROGRAM

TWENTY-NINTH ANNUAL SCIENTIFIC SESSION

AND

INSTRUCTION SEMINAR

## American Congress of Physical Medicine

September 4-8, 1951

HOTEL SHIRLEY-SAVOY

DENVER

### SCHEDULE OF INSTRUCTION SEMINAR

#### TUESDAY, SEPTEMBER 4

- 10:00 to 10:50—(A) **Electromyograph, Basic Principles (with demonstration).** GOLSETH. Silver Spruce Room.
- 10:00 to 10:50—(1) **Scoliosis: Causes, Prognosis, Physical Treatment.** RISSER. Blue Spruce Room.
- 11:00 to 11:50—(B) **Electromyography, Clinical Aspects.** GOLSETH. Silver Spruce Room.
- 11:00 to 11:50—(2) **Hemiplegia Physical Rehabilitation.** DEEVER. Blue Spruce Room.
- 3:00 to 3:50—(C) **Functional Anatomy Spine and Trunk.** QUIRING. Silver Spruce Room.
- 3:00 to 3:50—(3) **Low Back Pain with Reference to Manipulation.** WRIGHT. Blue Spruce Room.
- 4:00 to 4:50—(D) **Functional Anatomy Spine and Trunk.** QUIRING. Silver Spruce Room.
- 4:00 to 4:50—(4) **Post-reduction Treatment of Fractures.** E. KRUSEN, JR. Blue Spruce Room.

#### WEDNESDAY, SEPTEMBER 5

- 8:30 to 9:20—(E) **Deconditioning in the Invalid and the Aged.** TAYLOR. Silver Spruce Room.
- 8:30 to 9:20—(5) **Crutch Walking with Demonstration.** DEEVER. Blue Spruce Room.
- 9:30 to 10:20—(F) **Deconditioning in the Invalid and the Aged.** TAYLOR. Silver Spruce Room.
- 9:30 to 10:20—(6) **Physical Treatment of Peripheral Nerve Lesions.** KUITERT. Blue Spruce Room.

#### THURSDAY, SEPTEMBER 6

- 8:30 to 9:20—(G) **Electrical Stimulation — Types of Current and Clinical Physiology.** KUBICEK. Silver Spruce Room.
- 8:30 to 9:20—(7) **Treatment of Severely Disabled Rheumatoid Arthritis by Hormonal, Orthopedic and Rehabilitation Procedures.** BICKEL. Blue Spruce Room.
- 9:30 to 10:20—(H) **Electrical Stimulation — Types of Current and Clinical Physiology.** KUBICEK. Silver Spruce Room.
- 9:30 to 10:20—(8) **Essentials of Muscle Testing (with demonstration).** KNAPP. Blue Spruce Room.

#### FRIDAY SEPTEMBER 7

- 8:30 to 9:20—(J) **Technique of Scientific Medical Writing.** HAMMOND. Silver Spruce Room.
- 8:30 to 9:20—(9) **Essentials of Muscle Reeducation (with demonstration).** KENDELL. Blue Spruce Room.
- 9:30 to 10:20—(K) **Technique of Scientific Medical Writing.** HAMMOND. Silver Spruce Room.
- 9:30 to 10:20—(10) **Occupational Therapy: Prescription Writing.** MEAD. Blue Spruce Room.

### LECTURERS FOR INSTRUCTION SEMINAR

- WILLIAM H. BICKEL, M.D.** (by invitation), Orthopedic Surgeon, St. Mary's and Colonial Hospitals, Rochester, Minn.;
- GEORGE G. DEEVER, M.D.**, Professor of Clinical Rehabilitation and Physical Medicine, New York University College of Medicine, New York, N. Y.;
- JAMES G. GOLSETH, M.D.**, Associate Professor in Physical Medicine, University of Southern California Medical School, Los Angeles, Calif.;
- JOHNSON F. HAMMOND, M.D.** (by invitation), Associate Editor, The Journal of the American Medical Association, Chicago, Ill.;
- H. WORLEY KENDELL, M.D.**, Professor of Physical Medicine and Rehabilitation, Research and Educational Hospitals, University of Illinois College of Medicine, Chicago, Ill.;
- MILAND E. KNAPP, M.D.**, Clinical Professor of Physical Medicine, University of Minnesota Medical School, Minneapolis, Minn.;
- EDWARD M. KRUSEN, JR., M.D.**, Assistant Professor of Physical Medicine, Southwestern Medical College of the University of Texas, Dallas, Texas.;
- WILLIAM G. KUBICEK, Ph.D.** (by invitation), Associate Professor, Division of Physical Medicine, University of Minnesota Medical School, Minneapolis, Minn.;
- JOHN H. KUITERT, M.D.**, Chief, Physical Medicine Service, Walter Reed Army Hospital, Washington, D. C.;
- SEDGWICK, MEAD, M.D.**, Assistant Professor, Department of Physical Medicine, Washington University School of Medicine, St. Louis, Mo.;
- DANIEL P. QUIRING, Ph.D.** (by invitation), Head, Department of Anatomy, Cleveland Clinic Foundation; Associate Professor of Biology, Western Reserve University, Cleveland, Ohio.;
- JOSEPH C. RISSER, M.D.** (by invitation), Pasadena, Calif.;
- HENRY L. TAYLOR, Ph.D.** (by invitation), Associate Professor, The Laboratory of Physiological Hygiene, University of Minnesota, School of Public Health, Minneapolis, Minn.;
- JESSIE WRIGHT, M.D.**, Medical Director, D. T. Watson School of Physiatry, affiliated with the University of Pittsburgh School of Medicine, Pittsburgh, Pa.



## GENERAL INFORMATION

Date .....

APPLICATION FOR  
INSTRUCTION SEMINARIn Conjunction with the  
29th Annual Scientific and Clinical Session  
of theAMERICAN CONGRESS OF  
PHYSICAL MEDICINE

September 4-8, 1951

Hotel Shirley-Savoy, Denver, Colo.

Name.....  
(Please print)Address.....  
(Please print)

(If physician, please answer)

Member A.M.A. .... Member County Medical Society

.....  
(Give Name)

If Government Service, state briefly.....

(If therapist, please answer.)

(Note: The members in good standing of the American Registry of Physical Therapists, or the American Occupational Therapy Association are eligible to attend.)

.....  
(Signature in Ink)Please make check payable to and mail with  
application toAmerican Congress of Physical Medicine  
30 North Michigan Avenue Chicago 2, Illinois

## RULES GOVERNING THE READING OF PAPERS

No paper or address before the Congress shall occupy more than fifteen minutes in its delivery. The program is so arranged that all the time is utilized and it is therefore imperative that the stated time schedule is closely followed.

All papers read before the Congress shall be the property of the Congress for publication in the official journal. Each paper shall be deposited with the secretary of the section when read.

## THE CONVENTION

The registration desk will be open at 10:00 a. m., Monday, September 3 for pre-convention registration. It is important that everyone register before entering the lecture hall. Those not wearing the official badge will be refused admission. This meeting is not open to the public. No registration fee will be charged.

## BUSINESS SESSIONS

The annual business meeting for the members of the Congress will be held Tuesday, September 4, at 4 p. m., and on Wednesday, September 5, at 4:30 p. m.

## CONGRESS DINNER

The annual Congress dinner will be held on Wednesday evening, September 5 at 7:00 p. m., dress is optional. Exhibitors and guests are welcome. An interesting but brief dinner program has been arranged. You will enjoy this session, the only social function of the convention.

## THE INSTRUCTION SEMINAR

Courses are offered in two separate groups: One group, designated by letters, consists of ten lectures on basic subjects. A second group of ten lectures, designated by numerals, will present more general and clinical subjects. Physicians as well as physical therapists who are registered with the American Registry of Physical Therapists will be permitted to register for these courses. Note: Members in good standing of the American Occupational Therapy Association are eligible to enroll for the instruction course.

The instruction course will be given from 10:00 to 10:50 and 11:00 to 11:50, Tuesday morning September 4; from 3:00 to 3:50 and 4:00 to 4:50, Tuesday afternoon, September 4. It will continue at 8:30 to 9:30, and 9:30 to 10:30 the mornings of Wednesday, September 5, Thursday, September 6 and Friday, September 7. This schedule will enable attendance at both the course and scientific sessions.

Each registrant for the course is allowed the choice of one lecture during a period. The charge for the complete schedule of ten lectures is \$15.00. Less than ten lectures may be scheduled at \$2.00 per lecture. The right is reserved to reject any application if the Course Committee finds it desirable to do so. Registration for specific courses cannot be guaranteed when quotas are filled.

Those who have not completed their registration for the course should do so before attending any of the lectures. No one will be admitted to any of the course lectures without the official registration card for the course. Registration for the course may be completed on Monday, September 3, starting at 10:00 a. m., and continuing throughout the week starting at 8:00 a. m. at the main registration desk of the Congress.

## AMERICAN SOCIETY OF PHYSICAL MEDICINE

The American Society of Physical Medicine will hold its annual meeting, dinner, 7:00 p. m., Thursday, September 6.

## EDUCATIONAL CONFERENCE

The Educational Conference is open to members of the Congress and others by invitation. The Conference will convene at 1:30 p. m., Tuesday, September 4. An interesting program has been planned.



**SCIENTIFIC EXHIBITS**

Scientific exhibits will be on display again and should prove of great interest. As was the custom formerly, medals will be awarded to those exhibits which are adjudged the outstanding ones by the committee on scientific awards and will be announced at the annual Congress dinner.

**TECHNICAL EXHIBITS**

The program of the scientific sessions and instruction seminar has been arranged with intermission periods to give time for visits and inspection of the technical exhibits. As these exhibits have been arranged with considerable effort, we urge every member and guest to set aside sufficient time for a complete tour of all exhibits.

Exhibits will be open from 9:00 a. m. to 5:00 p. m., Wednesday, September 3, and Thursday, September 6, Friday, September 7 till 2 p. m.

**EDITORIAL BOARD**

The annual meeting of the Editorial Board will be held Monday, September 3, 8:30 a. m., at breakfast.

**AMERICAN REGISTRY OF  
PHYSICAL THERAPISTS**

To be announced.

**HYDROTHERAPY GROUP**

There will be a subscription luncheon meeting for the group interested in hydrotherapy on Wednesday, September 6 at 12:30 p. m., Hotel Shirley-Savo.

**VETERANS ADMINISTRATION**

There will be a dinner meeting for physiatrists, attendants and consultants in Physical Medicine and Rehabilitation for the Veterans Administration, Friday evening, September 7.

**SCHEDULE OF DAILY ACTIVITIES****29TH ANNUAL SESSION****MONDAY, September 3**

8:30 A.M. Editorial Board Breakfast.  
10:00 A.M. Board of Governors, Congress.  
10:00-3:00 Registration.  
6:30 P.M. Executives Dinner, Congress.

**TUESDAY, September 4**

8:00 A.M. Registration.  
10:00 A.M. Instruction Seminar, Silver Spruce Room.  
10:00 A.M. Instruction Seminar, Blue Spruce Room.  
10:30 A.M. Meeting, Advisory Committee on Education, American Medical Association.  
11:00 A.M. Instruction Seminar, Silver Spruce Room.  
11:00 A.M. Instruction Seminar, Blue Spruce Room.  
12:30 Noon Luncheon, Advisory Committee on Education (by invitation).  
1:30 P.M. Educational Conference.  
3:00 P.M. Instruction Seminar, Silver Spruce Room.  
3:00 P.M. Instruction Seminar, Blue Spruce Room.  
4:00 P.M. Instruction Seminar, Silver Spruce Room.  
4:00 P.M. Instruction Seminar, Blue Spruce Room.  
4:00 P.M. First Congress Business Meeting — Congress Members Only.

**WEDNESDAY, September 5**

8:00 A.M. Registration — Inspection of Exhibits.  
8:30 A.M. Instruction Seminar, Silver Spruce Room.  
8:30 A.M. Instruction Seminar, Blue Spruce Room.  
9:30 A.M. Instruction Seminar, Silver Spruce Room.  
9:30 A.M. Instruction Seminar, Blue Spruce Room.  
10:30 A.M. Scientific Program, Lincoln Room.  
10:30 A.M. Scientific Program, Colorado Room.  
12:00 Noon Luncheon and Inspection of Exhibits.  
12:30 P.M. Subscription Luncheon, Hydrotherapy Group.  
2:00 P.M. Formal Opening Session, Lincoln Room.  
4:30 P.M. Second Congress Business Meeting — Congress Members only.  
7:00 P.M. Annual Congress Dinner.

**THURSDAY, September 6**

8:00 A.M. Registration — Inspection of Exhibits.  
8:30 A.M. Instruction Seminar, Silver Spruce Room.  
8:30 A.M. Instruction Seminar, Blue Spruce Room.  
9:30 A.M. Instruction Seminar, Silver Spruce Room.  
9:30 A.M. Instruction Seminar, Blue Spruce Room.  
10:00 A.M. Scientific Program, Lincoln Room.  
10:30 A.M. Scientific Program, Colorado Room.  
12:00 Noon Luncheon and Inspection of Exhibits.  
2:00 P.M. Scientific Program, Lincoln Room.  
3:00 P.M. Board of Governors, Society.  
6:00 P.M. Society Dinner.

**FRIDAY, September 7**

8:00 A.M. Registration — Inspection of Exhibits.  
8:30 A.M. Instruction Seminar, Silver Spruce Room.  
8:30 A.M. Instruction Seminar, Blue Spruce Room.  
9:30 A.M. Instruction Seminar, Silver Spruce Room.  
9:30 A.M. Instruction Seminar, Blue Spruce Room.  
10:00 A.M. Board of Governors, Congress.  
10:30 A.M. Scientific Program, Lincoln Room.  
10:30 A.M. Scientific Program, Colorado Room.  
12:00 Noon Luncheon and Inspection of Exhibits.  
2:00 P.M. Scientific Program, Lincoln Room.

**SATURDAY, September 8**

9:00 A.M. Scientific Program, Colorado Room.

**EDUCATIONAL CONFERENCE****TUESDAY, September 4 — 1:30 P. M.**

Chairman — EARL C. ELKINS, Rochester, Minn.

1. Study of Education Facilities in Physical Medicine and Rehabilitation: Report of the Advisory Committee of the Council on Physical Medicine and Rehabilitation of the American Medical Association — Earl C. Elkins, M.D., Chairman.

**2. TITLE TO BE ANNOUNCED.**

F. H. ARESTAD, M.D. (by invitation), Associate Secretary, Council on Medical Education and Hospitals, American Medical Association, Chicago.

**3. Program for the Training of Residents in Physical Medicine.**

EDWARD B. SHIRES, M.D., Assistant Chief, Physical Medicine Service, Valley Forge Army Hospital, Phoenixville, Pa.

**4. Education of the Physiatrist.**

HERBERT KENT, M.D., Chief, Physical Medicine Rehabilitation Service, Veterans Administration Hospital, Indianapolis.  
Discussion of Shires and Kent Papers: Allen S. Russek, M.D., New York.



## GENERAL SCIENTIFIC SESSION

Sponsored by the American Society of  
Physical Medicine

WEDNESDAY, September 5 — 10:30 A. M.

## Lincoln Room

## OFFICERS OF THE SECTION

Chairman — DISRAELI KOBAC, Chicago.  
Secretary — DON J. ERICKSON, Rochester, Minn.

## 1. Mechanism of Absorption of Ultrasonic Energy in Blood.

GEORGE M. PERSOL, M.D., Director, Department of Physical Medicine, Hospital of the University of Pennsylvania, Philadelphia,  
and  
EDWIN L. CARSTENSEN, M.S. (by invitation), Department of Physical Medicine, Hospital of the University of Pennsylvania, Philadelphia.

## 2. Comparative Study of the Effects of Heat and Ultrasound on Nerve Conduction.

WALTER J. TREANOR, M.D., Fellow in Physical Medicine and Rehabilitation, Mayo Foundation;  
EDWARD H. LAMBERT, M.D. (by invitation), Assistant Professor of Physiology, Mayo Foundation;  
JULIA F. HERRICK, Ph.D. (by invitation), Associate Professor of Physiology, Mayo Foundation,  
and

FRANK H. KRUSEN, M.D., Professor of Physical Medicine, Mayo Foundation, and Head of Section on Physical Medicine and Rehabilitation, Mayo Clinic, Rochester, Minn.

Discussion of foregoing papers: Harry H. Rosenthal, M.D., New York.

## 3. Effect of Ultrasonic Energy on Growing Bone — An Experimental Study.

RALPH E. DE FOREST, M.D., Fellow in Physical Medicine and Rehabilitation, Mayo Foundation;  
JOSEPH M. JAMES, M.D. (by invitation), Instructor in Orthopedics, Mayo Foundation, Consultant in Orthopedics, Mayo Clinic;  
JULIA F. HERRICK, Ph.D. (by invitation), Associate Professor of Physiology, Mayo Foundation,  
and

FRANK H. KRUSEN, M.D., Professor of Physical Medicine, Mayo Foundation, and Head of Section on Physical Medicine and Rehabilitation, Mayo Clinic, Rochester, Minn.

## 4. Therapeutic Application of Ultrasonic Energy.

FRITZ FRIEDLAND, M.D., Chief, Physical Medicine Rehabilitation Service, Cushing Veterans Administration Hospital;  
JOHN G. BISGROVE, M.D. (by invitation), Resident in Physical Medicine Rehabilitation, Cushing Veterans Administration Hospital,  
and

BERNARD J. DOYLE, M.D. (by invitation), Resident in Physical Medicine Rehabilitation, Cushing Veterans Administration Hospital, Framingham, Mass.  
Discussion of foregoing papers: Willard Selzer, Ph.D., Los Angeles.

## 5. Influence of Microwave Irradiation on Bone Temperature.

STEVEN M. HORVATH, Ph.D. (by invitation), Associate Professor, Department of Physiology, State University of Iowa College of Medicine;  
and

BRUCE HUTT, R.P.T. (by invitation), Research Assistant, Department of Physiology, State University of Iowa College of Medicine, Iowa City.  
Discussion: Don J. Erickson, M.D., Rochester, Minn.

## 6. The Role of the Medical Rehabilitation Psychologist in Rehabilitation.

EVERILL FOWLKS, M.D., Chief, Physical Medicine Rehabilitation Service, Veterans Administration Hospital, Portland, Ore.

Discussion: Richard T. Smith, M.D., Philadelphia.

## GENERAL SCIENTIFIC SESSION

WEDNESDAY, September 5 — 10:30 A. M.

## Colorado Room

## OFFICERS OF THE SECTION

Chairman — WALTER S. McCALLAN, Saratoga Springs, N. Y.  
Secretary — EDWARD M. KRUSEN, JR., Dallas.

## 1. The Effect of Contrast Baths on the Peripheral Vascular Reactions of Patients with Rheumatoid Arthritis.

FRED J. FRICKE, M.D., Resident in Physical Medicine, Veterans Administration Hospital, Fort Logan, Colo.,  
and

JEROME W. GERSTEN, M.D., Assistant Professor, Department of Physical Medicine and Rehabilitation, University of Colorado Medical Center, Denver.

Discussion: Jesse G. Jenkins, M.D., Temple, Texas.

## 2. Combination Therapeutic Tank and Pool.

SAMUEL SVERDLIK, M.D., Director, Department of Physical Medicine and Rehabilitation, St. Vincent's Hospital, New York.

Discussion: John D. Currence, M.D., New York.

## 3. Tissue Turgor in Relation to Prescription of Physical Measures.

JESSIE WRIGHT, M.D., Medical Director, D. T. Watson School of Physiatry, Affiliated with the University of Pittsburgh School of Medicine, Pittsburgh.

Discussion: F. A. Hellebrandt, M.D., Richmond, Va.

## 4. Revised Teaching of Massage.

HANS J. BEHREND, M.D., Associate in Physical Medicine, Hospital for Joint Diseases, New York.

Discussion: Nathan H. Palmer, M.D., New Orleans.

## 5. The Effect of Massage on Lymph Flow.

FREDERIC J. KOTTKE, M.D., Ph.D., Associate Professor, Division of Physical Medicine, University of Minnesota Medical School,  
and

MARGARET P. LADD, B.S., R.P.T. (by invitation), Instructor, Division of Physical Medicine, University of Minnesota Medical School, Minneapolis.

Discussion: Samuel A. Warshaw, M.D., Brooklyn, N. Y.

## 6. Effect of Massage on Muscle Temperature.

ALFRED EBEL, M.D., Chief, Clinic Section, Physical Medicine Rehabilitation Service, Veterans Administration Hospital, Bronx, N. Y.

Discussion: Jerome Weiss, M.D., Brooklyn, N. Y.



**GENERAL SCIENTIFIC SESSION****WEDNESDAY, September 5 — 2 P. M.****Lincoln Room****OFFICERS OF THE SECTION**

Chairman — ARTHUR L. WATKINS, Boston.  
 Secretary — FRANCES BAKER, San Mateo, Cal.

**OPENING OF THE 29TH  
 ANNUAL SESSION**
**INVOCATION**

The Reverend Harvey H. Potthoff,  
 Christ Methodist Church, Denver.

**ADDRESSES OF WELCOME**

Ward Darley, M.D.,  
 Vice President, and Dean of the Department of Medicine,  
 University of Colorado School of Medicine.  
 Ervin A. Hinds, M.D.,  
 President, Colorado State Medical Society.

**1. First John Stanley Coulter Memorial Lecture.**  
 KRISTIAN G. HANSSON, M.D., New York.

**2. Two Important Statistical Devices.**

FREDERIC T. JUNG, M.D., Assistant Secretary,  
 Council on Physical Medicine and Rehabilitation,  
 American Medical Association, Chicago.  
 Discussion: Emmett M. Smith, M.D., Takoma Park, Md.

**3. Neuropsychiatric Aspects of Rehabilitation.**

FRANKLIN G. EBAUGH, M.D. (by invitation), Pro-  
 fessor of Psychiatry, University of Colorado School of  
 Medicine, Denver.  
 Discussion: George G. Deaver, M.D., New York.

**4. Iontophoresis as a Method of Myocardium Pen-  
 etration by Acetyl Beta Methyl Choline.**

NICANDRO CHAVEZ, M.D., Director, Department of  
 Physical Therapy, National Institute of Cardiology of  
 Mexico,

and  
 ERNESTO S. PALLARES, D. Sc. (by invitation), Di-  
 rector of Chemical Investigation, Department of Physi-  
 ology and Pharmacology, National Institute of Cardiol-  
 ogy of Mexico, Mexico City.  
 Discussion: William H. Schmidt, M.D., Philadelphia.

**5. Misbranded Devices.**

IRVIN KERLAN, M.D. (by invitation), Acting Medi-  
 cal Director, Food and Drug Administration, Clinical  
 Instructor in Medicine, George Washington University  
 School of Medicine, Washington, D. C.  
 Discussion: Howard A. Carter, B.S., Chicago.

**6. The Nature and Treatment of Fibrositis.**

ALFRED J. MARTIN, D. Phys. Med. (by invitation),  
 Physician in Charge of Medical Rehabilitation Depart-  
 ment, Royal Free Hospital, London, England.  
 Discussion: Fred B. Moor, M.D., Los Angeles.

**GENERAL SCIENTIFIC SESSION**

Sponsored by the American Society of  
 Physical Medicine

**THURSDAY, September 6 — 10:30 A. M.****Lincoln Room****OFFICERS OF THE SECTION**

Chairman — O. LEONARD HUDDLESTON, Santa Monica, Cal.  
 Secretary — DONALD L. ROBE, Kansas City, Kan.

**1. Effect of Physical Agents on the Flow of Lymph.**

EARL C. ELKINS, M.D., Assistant Professor of  
 Physical Medicine, Mayo Foundation, and Consultant in  
 Physical Medicine and Rehabilitation, Mayo Clinic;  
 JULIA F. HERRICK, Ph.D. (by invitation), Associate  
 Professor of Physiology, Mayo Foundation;  
 JOHN H. GRINDLAY, M.D. (by invitation), Instruc-  
 tor in Physiology, Institute of Experimental Medicine,  
 Mayo Foundation;

RALPH E. DE FOREST, M.D., Fellow in Physical  
 Medicine and Rehabilitation, Mayo Foundation,  
 and

FRANK C. MANN, M.D. (by invitation), Professor of  
 Experimental Surgery, Institute of Experimental Medi-  
 cine, Mayo Foundation, Rochester, Minn.

Discussion: William D. Paul, M.D., Iowa City.

**2. A Comparative Study of the Efficacy of Physical  
 Therapy Measures and Peripheral-Acting Drugs  
 for Increasing Peripheral Blood Flow.**

HARRY M. HINES, Ph.D., Professor and Head, De-  
 partment of Physiology, State University of Iowa Medi-  
 cal School, Iowa City.

Discussion: Karl Harpuder, M.D., New York.

**3. An Objective Method of Evaluating Muscle  
 Tightness: Preliminary Observations on the  
 Effectiveness of Various Procedures in Produc-  
 ing Muscle Relaxation in the Hemiplegic Ex-  
 tremity.**

WILLIAM J. LAJOIE, M.D., Department of Physical  
 Medicine and Rehabilitation, University of Colorado  
 School of Medicine,  
 and

JEROME W. GERSTEN, M.D., Assistant Professor,  
 Department of Physical Medicine and Rehabilitation,  
 University of Colorado Medical Center, Denver.

Discussion: Bruce Grynbaum, M. D., New York.

**4. The Importance of and a Method for Restoration  
 of Sherrington's Reciprocal Innervation in  
 Physical Rehabilitation.**

HARVEY E. BILLIG, JR., M.D., Director, Billig  
 Clinic, Los Angeles.

Discussion: Miland E. Knapp, M.D., Minneapolis.

**5. A New Method for Quantitative Measurement of  
 Muscle Excitability.**

HARRY D. BOUMAN, M.D. (by invitation), Professor  
 of Physical Medicine, University of Wisconsin Medical  
 School, Madison, Wis.

Discussion: Harry M. Hines, Ph.D., Iowa City.

**6. The Relationship of the Febrile Hemogram to the  
 Pituitary and Adrenals.**

WILLIS L. HUBLER, M.D. (by invitation), Fellow in  
 Medicine, Mayo Foundation;  
 G. M. HIGGINS, M.D. (by invitation), Professor of  
 Experimental Biology, Institute of Experimental Medi-  
 cine, Mayo Foundation,  
 and

JULIA F. HERRICK, Ph.D. (by invitation), Associate  
 Professor of Physiology, Mayo Foundation, Rochester,  
 Minn.

Discussion: Frederic T. Jung, M.D., Chicago.



**GENERAL SCIENTIFIC SESSION****THURSDAY, September 6 — 10:30 A. M.****Colorado Room****OFFICERS OF THE SECTION**

Chairman — WILLIAM D. PAUL, Iowa City.

Secretary — CHARLES O. MOLANDER, Chicago.

**1. The Treatment of Peripheral Vascular Diseases.**

ARTHUR E. WHITE, M.D., Chief, Physical Medicine Service, Letterman Army Hospital, San Francisco.

Discussion: Walter M. Solomon, M.D., Cleveland.

**2. Simplified Electrotherapy. A Stimulator for Home Treatment of Denervated Muscle.**

SEDGWICK MEAD, M.D., Director, Department of Physical Medicine, Washington University School of Medicine, St. Louis, Mo.

Discussion: Isadore Levin, M.D., Washington, D. C.

**3. The Ineffectiveness of Ultraviolet Hemo-irradiation on Distemper.**

KHALIL G. WAKIM, M.D., Ph.D. (by invitation), Professor of Physiology and Research Consultant to the Section on Physical Medicine and Rehabilitation, Mayo Foundation;

CARL F. SCHLOTTHAUER, D.V.M. (by invitation), Professor of Experimental Medicine, Institute of Experimental Medicine, Mayo Foundation;

FRANK H. KRUSEN, M.D., Professor of Physical Medicine, Mayo Foundation, and Head of Section on Physical Medicine and Rehabilitation, Mayo Clinic, and

FORDYCE HEILMAN, M.D. (by invitation), Professor of Bacteriology, Mayo Foundation, Rochester, Minn.

Discussion: Robert C. Olney, Lincoln, Neb.

**4. The Precision of the Elbow Ergography.**

H. HARRISON CLARKE, Ed. D. (by invitation), Professor of Physical Education, Springfield College, Springfield, Mass.

Discussion: Ben L. Boynton, M.D., Houston, Texas.

**5. Energy Cost of Various Activities in Relation to Tuberculosis.**

EDWARD E. GORDON, M.D. (by invitation), Coordinator of Education, Institute of Physical Medicine and Rehabilitation, New York.

Discussion: Bathurst B. Bagby, M.D., Swannanoa, N. C.

**6. Ethyl Chloride Spray for Relief of Painful Muscle Spasm.**

JANET TRAVELL, M.D., (by invitation), Assistant Professor of Clinical Pharmacology, Cornell University of Medicine, New York.

Discussion: Harold Dinken, M.D., Denver.

**GENERAL SCIENTIFIC SESSION****THURSDAY, September 6 — 2 P. M.****Lincoln Room****OFFICERS OF THE SECTION**

Chairman — H. WORLEY KENDELL, Chicago.

Secretary — ARTHUR E. WHITE, San Francisco.

**REHABILITATION****1. Physical Medicine and Rehabilitation: Prescription and Effectiveness in Chronic Illness.**

A. B. C. KNUDSON, M.D., Chief, Physical Medicine and Rehabilitation Division, Veterans Administration Central Office, Washington, D. C.

Discussion: Nila Covalt, M.D., Rocky Hill, Conn.

**2. Some New Developments in the Rehabilitation of the Amputee.**

ATHA THOMAS, M.D. (by invitation), Clinical Professor of Orthopedic Surgery, University of Colorado School of Medicine, Denver.

Discussion: Odion F. von Werssowetz, M.D., Nashville, Tenn.

**3. Therapeutic Teaching — Group Work in Physical Therapy Rehabilitation.**

MORTON HOBERMAN, M.D., Consultant in Physical Medicine, New York State Rehabilitation Hospital, and

ERBERT F. CIGENIA, B.S., R.P.T. (by invitation), Director of Physical Rehabilitation, New York State Rehabilitation Hospital, West Haverstraw, N. Y.

Discussion: Harry Kessler, M.D., Washington, D. C.

**4. Orthopaedic Surgery in the Rehabilitation of the Paraplegics.**

GUSTAVE GINGRAS, M.D., Head of Physical Medicine, Queen Mary Veterans Hospital, Department of Veterans Affairs, and

J. M. MacINTYRE, M.D. (by invitation), Consultant in Orthopaedics, Queen Mary Veterans Hospital, Montreal, Canada.

Discussion: Leslie Blau, M.D., Wadsworth, Kan.

**5. Educational Therapy in the Rehabilitation of the Disabled in the Veterans Administration.**

LOUIS B. NEWMAN, M.E., M.D., Chief, Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, and

IRVING R. POPELL, M.A. (by invitation), Head, Educational Therapy Unit, Veterans Administration Hospital, Hines, Ill.

Discussion: Charles O. Molander, M. D., Chicago.



**GENERAL SCIENTIFIC SESSION****FRIDAY, September 7 — 10:30 A. M.****Sponsored by the American Society of  
Physical Medicine****Lincoln Room****OFFICERS OF THE SECTION**Chairman — WILLIAM BIERMAN, New York.  
Secretary — BENJAMIN A. STRICKLAND, Montgomery, Ala.**ELECTROMYOGRAPHY****1. Researches in Electromyology.**

H. WORLEY KENDELL, M.D., Professor of Physical Medicine and Rehabilitation, University of Illinois College of Medicine, and

ARTHUR A. RODRIQUEZ, M.D., Assistant Professor of Physical Medicine and Rehabilitation, University of Illinois College of Medicine, Chicago.

**2. Electromyograph as Related to Physical Medicine.**

JAMES G. GOLSETH, M.D., Associate Professor, Department of Physical Medicine, University of Southern California Medical School, Los Angeles.

Discussion of foregoing papers: George M. Piersol, Philadelphia.

**3. Electromyographic Recording of Muscular Activity in Gait, Comparing Patterns in the Normal with Those in Patients Having Spastic Paresis.**

GERALD G. HIRSCHBERG, M.D., Fellow in Physical Medicine and Rehabilitation, New York University College of Medicine, New York.

**4. An Electromyographic Study of the Motor System in Normal Man and in Spastics.**PAUL F. A. HOEFER, M.D., Ph.D. (by invitation), Associate Professor of Neurology, Columbia University College of Physicians and Surgeons and Associate Attending Neurologist, Presbyterian Hospital, New York.  
Discussion of foregoing papers: Arthur L. Watkins, M.D., Boston.**5. The Repetimeter — The Report of a New Clinical Instrument.**

ROBERT A. SCHLESINGER, M.D., Chief, Physical Medicine Rehabilitation Service, Veterans Administration Hospital, Muskogee, Okla.

Discussion: Louis P. Biro, M.D., Santa Monica, Cal.

**GENERAL SCIENTIFIC SESSION****FRIDAY, September 7 — 10:30 A. M.****Colorado Room****OFFICERS OF THE SECTION**Chairman — KRISTIAN G. HANSSON, New York.  
Secretary — LOUIE B. NEWMAN, Chicago.**1. Biophysical Basis for Selection of Functional Back Braces.**

ODDIN F. von WERSSOWETZ, M.D., Professor of Physical Medicine, Meharry Medical College; Chief, Physical Medicine Rehabilitation Service, Thayer Veterans Administration Hospital, Nashville, Tenn.

Discussion: Robert W. Boyle, M.D., Ft. Thomas, Ky.

**2. The So-Called Bicipital Syndrome of the Shoulder.**

ROBERT W. NEWMAN, M.D., Associate Professor of Orthopaedics, State University of Iowa College of Medicine, Iowa City.

Discussion: John H. Kuitert, M.D., Washington, D. C.

**3. Exercises Following Bankard Operation for Recurrent Shoulder Dislocation.**

JACOB L. RUDD, M.D., Chief, Physical Medicine Rehabilitation Service, Veterans Administration Hospital, West Roxbury, Mass.

Discussion: William B. Snow, M.D., New York.

**4. Rehabilitation of the Patient with a Ruptured Intervertebral Disc After Surgery.**

JOHN H. ALDES, M.D., Director, Department of Rehabilitation and Physical Medicine, Cedars of Lebanon Hospital, and

FRANCES KOERNER, R.P.T. (by invitation), Department of Rehabilitation and Physical Medicine, Cedars of Lebanon Hospital, Los Angeles.

Discussion: Shelby Gamble, M.D., Cleveland.

**5. Prevention and Management of Athletic Disabilities.**

NORMAN C. OCHSENHIRT, M.D. (by invitation), Professor of Maxillo-Facial Surgery, University of Pittsburgh;

MR. CLIFF CHAMBERS,

and MURRAY B. FERDERBER, M.D., Pittsburgh.

Discussion: Frank J. Schaffer, M.D., Ft. Thomas, Ky.

**6. Industrial Hand Disabilities.**

LEONARD J. YAMSHON, M.D., Instructor of Physical Medicine, College of Medical Evangelists, Los Angeles.

Discussion: Samuel Sherman, M.D., Pittsburgh.

**GENERAL SCIENTIFIC SESSION****FRIDAY, September 7 — 2 P. M.****Lincoln Room****OFFICERS OF THE SECTION**Chairman — MILAND E. KNAPP, Minneapolis.  
Secretary — JESSIE WRIGHT, Pittsburgh.**POLIOMYELITIS****1. Use of an Intensive Physical Medicine Program in the Rehabilitation of Convalescent and Chronic Anterior Poliomyelitis Patients.**

O. LEONARD HUDDLESTON, M.D., Department of Physical Medicine, University of Southern California School of Medicine, Los Angeles.

**2. Care of Poliomyelitis with Respiratory Involvement.**

CLARENCE DAIL, M.D., Associate Professor, Department of Therapeutics, College of Medical Evangelists School of Medicine, Loma Linda, Calif., and

ELIZABETH AUSTIN, M.D., Department of Physical Medicine, Los Angeles County Hospital, Los Angeles.  
Discussion of foregoing papers: Duane Schram, M.D. (by invitation), Gonzales, Texas.**3. Thenar Weakness Due to Poliomyelitis.**

RALPH WORDEN, M.D., Assistant Professor of Physical Medicine and Rehabilitation, Ohio State University College of Medicine, Columbus, Ohio, and

MILAND E. KNAPP, M.D., Clinical Professor of Physical Medicine, University of Minnesota Medical School, Minneapolis.

**4. The Effect of Intravenous Procaine on Temperature of the Extremities in Patients with Poliomyelitis.**

J. I. ROUTH, Ph.D. (by invitation), Associate Professor of Biochemistry, State University of Iowa Medical School, and

WILLIAM D. PAUL, M.D., Associate Professor of Medicine, State University of Iowa Medical School, Iowa City.

Discussion of foregoing papers: Kristian G. Hansson, M.D., New York.



## OCCUPATIONAL THERAPY

## 5. Prescribed Occupational Therapy.

NILA COVALT, M.D., Chief of Physical Medicine and Rehabilitation, Hospital for Chronic Illness, Rocky Hill, Conn.

Discussion: Herman L. Rudolph, M.D., Reading, Pa.

## 6. Art in Rehabilitation.

A. RAY DAWSON, M.D., Chief, Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, Richmond, Va.

Discussion: Florence Mahoney, M.D., Memphis.

## GENERAL SCIENTIFIC SESSION

SATURDAY, September 8 — 9 A. M.

## Colorado Room

## OFFICERS OF THE SECTION

Chairman—NATHAN H. POLMER, New Orleans.  
Secretary—F. A. Hellebrandt, Richmond, Va.

## 1. The Dielectric Constant of Body Fluids.

JULIA F. HERRICK, Ph.D. (by invitation), Associate Professor of Physiology, Mayo Foundation;

DEMETRIUS G. JELATIS, D. Sc. (by invitation), Consultant in Physics, Institute of Experimental Medicine, Mayo Foundation,

and  
GORDON M. LEE, D. Sc. (by invitation), Consultant in Electronics, Institute of Experimental Medicine, Mayo Foundation, Rochester, Minn.

Discussion: Sedgwick Mead, M.D., St. Louis, Mo.

## 2. Psychiatric Aspects of Physical Medicine: Therapist-Patient Relationship.

JACK MEISLIN, M.D., Chief, Physical Medicine and Rehabilitation Service, Franklin Delano Roosevelt Veterans Administration Hospital, Montrose, N. Y.

Discussion: Llewelyn King, M.D., Chillicothe, Ohio.

## 3. The Effects of Cerebral Diathermy.

EMERY K. STONER, M.D., Assistant Instructor in Physical Medicine, Department of Physical Medicine and Rehabilitation, Graduate School of Medicine, University of Pennsylvania, Philadelphia.

Discussion: Albert A. Martucci, M.D., Abington, Pa.

## 4. Table for Vertebral Elongation in the Treatment of Lumbo-Sciatic Syndrome.

EUGENE NEUWIRTH, M.D., Chief, Physical Medicine Rehabilitation Service, Veterans Administration Center, Whipple, Ariz.

Discussion: Ray Paskoski, M.D., Wood, Wis.

## 5. A Concept of the Mechanism of Physical Disability.

MILTON G. SCHMITT, M.D., Assistant Clinical Professor, Department of Therapeutics and Pharmacology, Stritch School of Medicine, Loyola University, Chicago.

Discussion: Joseph L. Kocur, M.D., Chicago.

## 6. Central Facilitation: The Basis for Treatment of Paralysis.

HERMAN KABAT, M.D., Medical Director, Kabat-Kaiser Institute, Vallejo, Calif.

Discussion: To Be Announced.

## 7. Studies on the Permeability of the Synovial Membrane in Rheumatoid Arthritis.

WILLIAM D. PAUL, M.D., Associate Professor of Medicine, State University of Iowa College of Medicine; J. I. ROUTH, Ph.D. (by invitation), Associate Professor of Biochemistry, State University of Iowa College of Medicine;

ROBERT E. HODGES, M.D. (by invitation), Resident Physician, Department of Internal Medicine, State University of Iowa College of Medicine;

CHARLES J. WRIGHT, JR., M.D. (by invitation), Resident Physician, Department of Orthopaedics, State University of Iowa College of Medicine,

and  
R. W. KNOUSE, M.S. (by invitation), Graduate Assistant, Department of Biochemistry, State University of Iowa College of Medicine, Iowa City.

Discussion: David H. Kling, M.D., Los Angeles.

## 8. The Organization of a Department of Physical Medicine and Rehabilitation.

JAMES W. RAE, JR., M.D., Assistant Professor of Physical Medicine and Rehabilitation, University of Michigan Medical School, Ann Arbor.

Discussion: Max K. Newman, M.D., Detroit.

## 9. Some Hazards in the Course of Rehabilitation of the Neurologically Handicapped.

EDWARD B. SCHLESINGER, M.D. (by invitation), Associate in Neurological Surgery, Columbia University College of Physicians and Surgeons, Associate Attending Neurosurgeon, Presbyterian Hospital and Attending Neurosurgeon, Institute for the Crippled and Disabled, New York.

Discussion: Louis B. Newman, M.D., Chicago.

## SCIENTIFIC EXHIBITS

Essential Factors in Physical Function. HARVEY E. BILLIG, JR., M.D.

Atomic Energy and Radiation Injuries. COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION.

Chronic Illness Program in Connecticut. NILA K. COVALT, M.D.

Plexiglass Splints in Treatment of Poliomyelitis. EVERILL W. FOWLKS, M.D., and ALBERT L. COOPER, M.D.

New Self-help Devices in Rehabilitation. FRITZ FRIEDLAND, M.D.

Department of Hospitals, City of New York. BRUCE B. GRYNBAUM, M.D.; MICHAEL M. DACSO, M.D., and HOWARD A. RUSK, M.D.

Electromyographic Recording of Muscular Activity in Level Walking in Normals and in Patients with Spasticity. GERALD G. HIRSCHBERG, M.D., and MORTON NATHANSON, M.D.



**Therapeutic Teaching — Group Procedures in Physical Therapy and Rehabilitation.** MORTON HOBBERMAN, M.D., and ERBERT F. CIVENIA, R.P.T.

**A Physical Medicine and Rehabilitation Center as a Private Enterprise and a Non-Profit Organization.** HERMAN KABAT, M.D., Ph.D., and O. LEONARD HEDDLESTON, M.D., Ph.D.

**Rehabilitation in Oto-Laryngology.** C. M. KOS, M.D., and SCOTT N. REGER, Ph.D.

**Paraplegic Stander.** FLORENCE I. MAHONEY, M.D., and FREDERICK J. BALSAM, M.D.

**Electrotherapy.** SEDGWICK MEAD, M.D., and EMILY E. MUELLER, R.P.T.

**Definitive and Differential Diagnosis of Poliomyelitis.** NATIONAL FOUNDATION FOR INFANTILE PARALYSIS.

**Easter Seal Services for the Physiatrist.** NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.

**Models of Tables for Elongation of Segments of Vertebral Column.** EUGENE NEUWIRTH, M.D.

**Studies in Rheumatoid Arthritis.** W. D. PAUL, M.D.; R. E. HODGES, M.D.; J. I. ROUTH, Ph.D., and C. J. WRIGHT, M.D.

**Repetimetry.** ROBERT A. SCHLESINGER, M.D.

**A Physical Medicine and Rehabilitation Hospital.** DUANE SCHRAM, M.D.

**Physical Medicine in the Treatment of Arthritic Deformities.** WILLIAM BENHAM SNOW, M.D., and JAMES A. COSS, M.D.

**Suspension Kinesitherapy.** ODON F. VON WERS-SOWETZ, M.D., and CECIL W. PAINTER, R.P.T.

**Traction Apparatus for Exercises of Lumbar Spine.** EUGENE H. WEISSENBERG, M.D.

**Sweating Test.** HARRY T. ZANKEL, M.D.; EDWARD P. REENE, M.D., and STANLEY F. RADZYMSKI, M.D.

## TECHNICAL EXHIBITS

### ARCHIVES OF PHYSICAL MEDICINE.

The leading publication in the field of Physical Medicine, issued monthly by the American Congress of Physical Medicine.

### THE BIRTCHER CORPORATION.

On display at the Birtcher booth will be found the very latest developments in electromedical-electrosurgical apparatus. You may examine the Birtcher Crystal Bandmaster Shortwave Diathermy or the latest model Challenger Shortwave. You may also inspect the representative display of accessories and devices which are useful in the art of Physical Medicine, as well as the ever popular Hyffrecator.

### THE BURDICK CORPORATION.

The Burdick Corporation will exhibit their complete line of Physical Medicine Equipment. Featured will be their latest models of improved diathermy equipment and their new model MS-2 Muscle Stimulator.

### S. H. CAMP & COMPANY.

S. H. Camp & Company, Jackson, Michigan, will display a complete line of Anatomical Supports for specific conditions. Experts from the Camp staff will be in attendance to answer questions pertaining to the scientific application of these supports and to advise regarding the availability of them in authorized service departments of stores throughout the country. The clinical effectiveness of Camp Supports, properly fitted, with Camp quality, and priced according to intrinsic value, warrants your investigation.

### G. W. CARNRICK CO.

Featured at the GWC exhibit will be Dioloxol (brand of mephenesin) the new orally-administered muscle relaxant drug for certain spastic and neuromuscular disorders which acts through the brain and spinal cord. AMA accepted. Dioloxol is indicated in infantile cerebral palsy, hemiplegia, diplegia, Parkinson's Syndrome, low back pain and other muscular spastic conditions.

### CHATTANOOGA PHARMACAL COMPANY, INC.

An interesting application of silicate gel's hygroscopic qualities to the field of physical medicine, THE HYDRO-COLLATOR STEAM PACK completely simplifies the problem of applying effective local moist heat.

Each application gives at least 30 minutes effective moist heat — without any wringing, dripping, or need for repeated applications.

### THE COCA-COLA COMPANY.

Ice-cold Coca-Cola served through the courtesy and co-operation of the Denver Coca-Cola Bottling Company and The Coca-Cola Company.

### DALLONS LABORATORIES.

The Dallons Laboratories will exhibit and demonstrate the latest postwar developments in Meditherm Crystal Controlled and non-Crystal Controlled Short Wave Diathermy apparatus. The complete line of Medi Quartz Ultra Violet generators will be shown as well as the newest portable Electro-Surgical Unit, The Medi-Sine Wave Generator for the stimulation of denervated muscles will also be displayed. We will be happy to welcome you.

### E & J MANUFACTURING CO.

All the latest developments in E & J Resuscitators, Resuscinets and Anesthetizers will be on display. Interesting and informative demonstrations by attending E & J technicians will be made for visitors. Of special interest to Anesthetists will be the new E & J Anespirator for the control of respiration during anesthesia.

### H. G. FISCHER & CO.

Inspect H. G. Fischer & Co.'s modern, low priced physical therapy equipment including short wave diathermy machines having approval or acceptance of Federal Communications Commission, American Medical Association, Underwriters Laboratories, Canadian Transport Department. Without obligation have an interesting demonstration of their "Patented Adjustable Induction Electrode" for short wave diathermy treatments.

### GENERAL ELECTRIC X-RAY CORPORATION.

For your prescription — these several pieces of apparatus: Sir Morton Smart Instrument for graduated muscular contraction. The Cardioscribe, a direct-writing electrocardiograph — your selection of patient leads through push-button controls. For operation on the approved new international frequencies for United States and Canada — the Inductotherm. Place your confidence in these AMA accepted products for your specialty.

### ILLE ELECTRIC CORPORATION.

Hydromassage Subaqua Therapy Equipment. Ille Electric Corporation will demonstrate how the care of infantile paralysis, arthritis, and other disabling conditions can be greatly improved by the use of Hydromassage Subaqua Therapy Tanks. They will display a Mobile Whirlpool Bath with Mobile Adjustable High Chair and Paraffin Bath.



**R. J. LINDQUIST COMPANY.**

New items to be shown for the first time include (1) a small-size short-wave diathermy that is really portable; and (2) a sensational relaxation chair for the administration of supplemental oxygen. The Chronowave electrostimulator, the Chronotherm shortwave, the Desert Sun lamp, and the Chronaximeter will also be available for demonstration.

**MEDCO PRODUCTS CO.**

Your meeting is one of more than 60 state, sectional and national meetings where more than 90,000 physicians in 1951 will have an opportunity to see the interesting Medcotronic low volt generator. Make it a point to visit our booth where our representative will be glad to demonstrate the Council Accepted Medcotronic.

**THE MEDITRON COMPANY, INC.**

The Meditron Company, Inc., will display the Meditron Electromyograph, Model 201A with Myscope as well as the Gosselt-Fizzell Constant Current Impulse Stimulator and the Model NS, Neurosurgical Stimulator.

Demonstrations of the Myscope will be made, showing this radically new method of recording and replaying permanent, continuous electromyographic information.

**PHILIP MORRIS & CO., LTD., INC.**

Philip Morris and Company will show the results of research on the irritant effects of cigarette smoke. These results show conclusively that Philip Morris are less irritating than other cigarettes. An interesting demonstration will be made on smokers at the exhibit which will show the difference in cigarettes.

**FOOR & LOGAN MFG. CO.**

The Vaso-Pneumatic offers an active and efficient mechanical massage of the extremities. Neoprene cuffs around the arm or leg are serially inflated and deflated to form a parastatic pressure wave which moves body fluids up or down the extremity. Quick application and unusually short treatment time.

**RAYTHEON MANUFACTURING CO.**

The Microtherm, Raytheon's modern radar diathermy will be featured. Our representatives look forward once again to the opportunity of greeting members of the Congress and will be pleased to serve them in anyway possible.

**THE RIES CORPORATION.**

"MOISTAIRE" Heat Therapy Equipment, produces a heated environment of air saturated with water vapor, based on the principle of dew point control. It has been found to hasten convalescence of many common disabilities. This physiologically sound and safe procedure increases the volume of local blood flow measurably.

**TECA CORPORATION.**

The Teca Corporation, which celebrated its tenth anniversary in January of this year, will show their complete line of Low Volt Equipment including their Variable Frequency Generators, Models CD7 and CD4. We are also showing the new Teca Constant Voltage Chronaxie Meter, and the Pulse Adapter. You are cordially invited to ask for a demonstration of any unit.

**THERMO-ELECTRIC COMPANY.**

Dickson Paraffin Baths pioneered and developed in cooperation with Cleveland Hospitals where Dickson Paraffin Baths have been in continuous use for ten to fifteen years. Mahogany mouldings designed for the comfort of the patient. Double control of the melting element insures maximum safety. Patented drain. Three models will be shown.

**ULTRASONIC MEDICAL EQUIPMENT CORPORATION.**

The Ultrasonic Medical Equipment Corporation, New York, will exhibit their ULTRASONOR machines. Two models will be shown, a small portable, and a larger unit for Hospitals. Each model works with permanent or impulse sounding.

**WEBSTER THERAPEUTIC EQUIPMENT COMPANY.**

Eric Barschat, afflicted with multiple sclerosis, wishes to demonstrate his FOLDAWAY "JIM" and BEXERCISER, which through daily exercises, according to advice and instruction from physician, contribute to his steadily progressing rehabilitation. Ideal equipment for physicians and hospitals with limited space.



CHEST: LUNGS *reg. excursions*

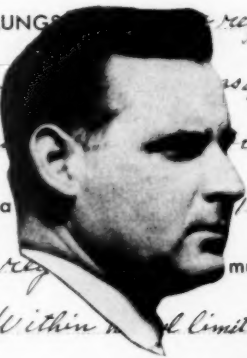
Palp *no* *no of dulness or crepitation*

Ausc. *no* *no*


HEART—Rate *132/84*

Rhythm *reg* *murs 0*

Borders *Within normal limits*



*A Clean Bill of Health?*



Nothing unusual about his history — he's in for a "routine physical." Heart sounds are normal, chest clear, normal blood and urine findings. But he can't be given a clean bill of health without an electrocardiogram:

*"Electrocardiograms should become part of the routine physical examination of all patients over 40 years of age."*

—Winsor, T.: Electrocardiography  
for the General Practitioner,  
GP 3:59-69 (Mar.) 1951.

Make every "routine physical" complete with the —

**Burdick**

**EK-2 DIRECT-RECORDING  
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— for an immediate and accurate record,

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## PHYSICAL MEDICINE \*\*

The following services are approved by the Council on Medical Education and Hospitals of the American Medical Association and the American Board of Physical Medicine and Rehabilitation. Residencies in this specialty have been approved without specifying the number of years for which they are accredited. The Board will give appropriate credit for training in these hospitals on an individual basis.

Hospitals, 42 Assistant Residencies and Residencies, 55

Name of Hospital	Location	Chief of Service	Inpatients Treated	Number of Treatments	Asst. Res. & Residencies Offered	Beginning of Service (1960)	Beginning of Service (Month)
Letterman General Hospital*	San Francisco	A. E. White	21,861	185,112	2	1/1, 7/1	n
†Fitzsimons General Hospital*	Denver	H. B. Luscombe	21,090	261,585	4	7/1	n
Army Medical Center*	Washington, D. C.	E. M. Smith	8,676	134,137	6	7/1	n
<b>Veterans Administration</b>							
†Veterans Admin. Hospital*	Ft. Logan, Colo.	F. J. Fricke	4,610	58,870	1	7/1	n
Veterans Admin. Hospital	Chamblee, Ga.	G. D. Williams	4,923	39,181	1	7/1	n
Veterans Admin. Hospital	Hines, Ill.	L. B. Newman	20,052	475,950	2	1/1, 7/1	n
Veterans Admin. Hospital	New Orleans	S. Winokur	1,107	49,815	1	7/1	n
Veterans Admin. Hospital	Framingham, Mass.	F. Friedland	9,000	24,000	2	7/1	n
Veterans Admin. Hospital	Jefferson Bldg., Mo.	S. Mead	4,046	52,920	2	7/1	n
†Veterans Admin. Hospital	New York City	K. Harpuder	12,613	278,817	3	1/1, 7/1	n
Veterans Admin. Hospital	Cleveland	H. T. Zankel	2,452	105,000	2	7/1	n
†Veterans Admin. Hospital	Aspenwall, Pa.	S. Machover	1,993	62,792	1	7/1	n
†Veterans Admin. Hospital	Portland, Ore.	E. W. Fowles	4,395	96,766	1	1/1, 7/1	n
<b>Hachudori</b>							
Los Angeles County Hospital*	Los Angeles	O. L. Huddleston	—	132,694	1	Varies	\$155.00
White Memorial Hospital*	Los Angeles	F. B. Moor	33,606	—	—	7/1	120.00
Stanford University Hospital*	San Francisco	W. H. Northway	—	6,833	—	7/1	50.00
University of Colorado Medical Center	Denver	H. L. Dinken	2,322	25,088	1	7/1	75.00
Colorado General Hospital*	Emory Univ., Ga.	R. L. Bennett	8,448	29,266	1	7/1	50.00
†Emory University Hospital*	Warm Springs, Ga.	—	889	1,108	2	7/1	—
Georgia Warm Springs Foundation	Chicago	D. Kobak	3,357	33,282	—	1/1, 7/1	—
Cook County Hospital*	Chicago	C. O. Molander	1,607	19,443	1	Varies	25.00
Michael Reese Hospital*	Chicago	—	13,284	34,813	—	7/1	100.00
Northwestern University Medical School	Kansas City, Kan.	D. L. Rose	11,684	31,838	1	7/1	—
University of Kansas Medical Center*	Boston	—	—	—	—	—	—
†Massachusetts General Hospital*	Minneapolis	M. Knapp	15,391	21,885	4	Varies	105.00
University of Minnesota Hospital*	Rochester, Minn.	F. H. Krusen	—	—	9	7/1	92.50
Mayo Foundation	St. Louis	—	820	10,951	—	7/1	25.00
Barnes Hospital*	New York City	—	—	—	—	—	—
†Bellevue Hospital, Div. III—	New York City	—	—	—	—	—	—
New York University*	New York City	—	—	—	—	—	—
Goldwater Memorial Hospital*	New York City	—	2,799	124,357	—	—	—
Hospital for Joint Diseases*	New York City	J. Weiss	76,070	93,036	1	7/1	40.00
Hospital for Special Surgery	New York City	K. G. Hansson	—	41,111	—	—	—
Montefiore Hosp. for Chronic Diseases*	New York City	K. Harpuder	—	—	—	—	—
Mount Sinai Hospital*	New York City	W. Bierman	—	—	—	7/1	50.00
New York City Hospital*	New York City	F. K. Safford, Jr.	955	26,418	2	—	—
†Presbyterian Hospital*	New York City	W. B. Snow	70,405	191,021	2	1/1	41.66
St. Luke's Hospital*	New York City	R. Muller	1,202	126,904	1	7/1	50.00
†Rehabilitation Hospital*	W. Haverstraw, N.Y.	M. Hoberman	322	291,115	1	—	200.00
Cleveland Clinic Hospital*	Cleveland	S. G. Gamble	17,885	17,884	1	7/1	135.00
Hospital of the Univ. of Pennsylvania*	Philadelphia	G. M. Piersol	1,386	15,575	1	Varies	100.00
Philadelphia General Hospital*	Philadelphia	—	3,073	21,769	—	—	—
Medical College of Virginia, Hosp. Div.*	Richmond, Va.	F. A. Hellebrandt	2,787	34,009	—	—	—
State of Wisconsin General Hospital*	Madison, Wis.	H. D. Bouman	3,783	45,840	—	—	—

The star (\*) indicates hospitals approved for training interns.

The dagger (†) indicates temporary approval.

1 Residencies open to women.

2 Includes Fellowships.

n Salary established by government pay tables.

\*\* Reprinted in part J. A. M. A. 142:1195 (April 15) 1950.

## ARCHIVES AVAILABLE ON MICROFILM

The ARCHIVES OF PHYSICAL MEDICINE is now available to libraries in microfilm. A microfilm edition will be sold only to bona fide subscribers of the ARCHIVES, is not for resale and will be distributed at the end of the volume year.

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# **APPROVED SCHOOLS OF OCCUPATIONAL THERAPY \*\*** **Council on Medical Education and Hospitals of the American Medical Association**

Name and Location of School	Director and Medical Director	Entrance Requirements	Duration of Course <sup>1</sup>	Classes Begin	Graduates in 1950	Tuition per Year	Certificate, Diploma, Degree
University of Southern California, Los Angeles*	Margaret S. Rood	Degree	18 mos.	Varies	12	\$594	Certificate
Mills College, Oakland, Calif.	R. A. Young, M.D.	High sch.	5 yrs.	Varies	19	\$540	Cert. & Deg.
San Jose State College, San Jose, Calif.*	E. H. Hill	Degree	2½ yrs.	FebSept	2	\$250	Certificate
University of Illinois College of Medicine, Chicago*	S. M. Dorinson, M.D.	High sch.	5 yrs.	VarSept	7	\$28.60	Certificate
State University of Iowa, Iowa City*	Mary D. Booth, M.D.	Degree	46 mos.	Varies	13	\$28.00	Cert. & Deg.
University of Kansas, Lawrence	Charles Lanning, M.D.	High sch.	5 yrs.	MarSept	13	\$110	Degree
Western School of Occupational Therapy, 7 Harcourt St., Boston*	S. W. Olson, M.D.	High sch.	19 mos.	FebSept	2	\$142	Certificate
Wayne University, Detroit*	Marguerite McDonald	High sch.	46 mos.	FebSept	5	\$144	Cert. & Deg.
Kalamazoo School of Occupational Therapy, Kalamazoo, Mich.*	W. D. Paul, M.D.	High sch.	46 mos.	FebSept	16	\$135	Degree
Michigan State Normal College, Ypsilanti, Mich.*	Nancy R. Greenman	High sch.	2 yrs.	Sept	21	\$500	Diploma
University of Minnesota*	A. W. Reago, M.D.	Degree	19 yrs.	Varies	1	\$150	Certificate
College of St. Catherine, 2001 Randolph, St. Paul	Barbara Jewett, M.D.	High sch.	46 mos.	FebSept	2	\$75	Diploma
Washington University School of Medicine, St. Louis*	Marion R. Siegar	Degree	18 mos.	FebSept	2	\$75	Cert. & Deg.
University of New Hampshire, Durham*	R. B. Burrell, M.D.	1 yr. coll.	4 yrs.	FebSept	6	\$67.50	Degree
Columbia University College of Physicians and Surgeons, New York City*	Frances Herrick	High sch.	40 mos.	Sept	12	\$120	Degree
New York University School of Education, New York City*	V. L. Callaghan, M.D.	High sch.	4½ yrs.	Varies	21	\$225	Degree
Ohio State University, Columbus*	Joseph Katke, M.D.	High sch.	11-14 mos.	Sept	11	Univer-	Certificate
Philadelphia School of Occupational Therapy of the School of Podiatric Medicine, Philadelphia*	Sister Jeanne Marie	Degree	28 mos.	Sept	5	\$200	Cert. & Deg.
Texas State College for Women, Denton	E. M. Ryan, M.D.	High sch.	17 mos.	Sept	20	\$600	Certificate
Richmond Professional Institute, 801 W. Franklin St., Richmond, Va.*	Berna L. Rozmarzowski	Degree	27 mos.	FebSept	10	\$600	Certificate
College of Puget Sound, 18th and Warner Sts., Tacoma, Wash.*	Esther Drew	1 yr. coll.	4½ yrs.	FebSept	2	\$500	Cert. & Deg.
University of Wisconsin, Madison*	Martha E. Jackson	High sch.	18 mos.	Varies	16	\$90	Degree
Milwaukee Downer College, Dept. of Occupational Therapy, 2512 E. Hartford Ave., Milwaukee	I. A. MacDonald	Degree	18 mos.	Sept	21	\$600	Certificate
Mount Mary College, 920 and Burlington, Milwaukee	Marjorie Fish, M.D.	High sch.	15 yrs.	FebSept	1	\$50	Degree
	F. C. Vaskin, M.D.	High sch.	5 yrs.	Sept	5	\$200	Certificate
	Pammy W. Vanderkool	High sch.	4 yrs.	FebSept	4	\$200	Cert. & Deg.
	H. Elizabeth Massick	Degree	10-18 mos.	FebSept	5	\$120	Dipl. & Deg.
	L. E. Barrett, M.D.	High sch.	5 yrs.	Sept	2	\$250	Cert. & Deg.
	Edna Ellen Bell	High sch.	5 yrs.	FebSept	12	\$250	Dipl. & Deg.
	A. J. Herman, M.D.	High sch.	2 yrs. coll.	Sept	6	\$350	Cert. & Deg.
	H. D. Bouman, M.D.	High sch.	5 yrs.	Sept	11	\$260	Cert. & Deg.
	Henrietta W. McNary	High sch.	5 yrs.	Sept	14	\$260	Cert. & Deg.
	M. C. Borman, M.D.	High sch.	5 yrs.	Sept	14	\$260	Cert. & Deg.
	Sister Mary Agnes	High sch.	5 yrs.	Sept	14	\$260	Cert. & Deg.
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\*\* Reprinted J. A. M. A. 140:1104 (May 19) 1951.  
<sup>1</sup> Duration of course is expressed in academic years or in number of months.

2. Non-valedictorians charged additional fee.

\* Made as well as female students admitted.



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## MEETINGS OF INTEREST TO THOSE IN THE FIELD OF PHYSICAL MEDICINE AND REHABILITATION

In this column will be published information about meetings of interest to those in the field of physical medicine. New data should be sent promptly to the office of the ARCHIVES, 30 North Michigan Avenue, Chicago 2, Illinois.

*American Congress of Physical Medicine.* — 29th Annual Session, Shirley-Savoy Hotel, Denver, Colo., Sept. 4, 5, 6, 7, 8, 1951. Walter J. Zeiter, M.D., Chairman, Convention Committee, 30 North Michigan Ave., Chicago 2.

*American Occupational Therapy Association.* — Annual Convention, Sept. 8 to 15, Durham, N. H., Wentworth-by-the-Sea Hotel. Co-chairmen, Eleanor Chernewski, VA Hospital, Togus, Maine, and Margaret L. Blodgett, U. S. Marine Hospital, Brighton, Mass.

### International

*International Congress of Physical Medicine* (1952). London, July 14 to 19, 1952. Applications for the provisional program should be addressed to the Honorary Secretary, Dr. A. C. Boyle, International Congress of Physical Medicine (1952) 45, Lincoln's Inn Fields, London, W.C. 2.

*European Congress on Rheumatism* — Barcelona, Spain, Sept. 24-27, 1951. Dr. Gunnar Edstrom, Lund, Sweden, Secretary.

*International Gerontological Congress.* — Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14, 1951. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

*International Poliomyelitis Congress.* — Copenhagen, Denmark, Sept. 2-7, 1951. Prof. Niels Bohr, Statens Seruminstitut, 80 Amager Blvd., Copenhagen S., Denmark, President.

*International Society for the Welfare of Cripples.* — Fifth World Congress, Stockholm, Sweden, Sept. 10-14, 1951. Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

*World Confederation for Physical Therapy.* — Sept. 7 and 8, 1951, Copenhagen. Further information may be obtained from Miss M. J. Neilson, Convener and Secretary, Provisional Committee, World Confederation for Physical Therapy, Tavistock House North, Tavistock Square, London W. C. 1, England.

*Tenth International Congress of Industrial Medicine.* — Lisbon, Portugal, Sept. 9th to 15th, 1951. Secretary, Prof. L. Carrozzì, Instituto Nacional do Trabalho e Previdência, Praça do Comércio, Lisbon.

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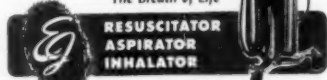


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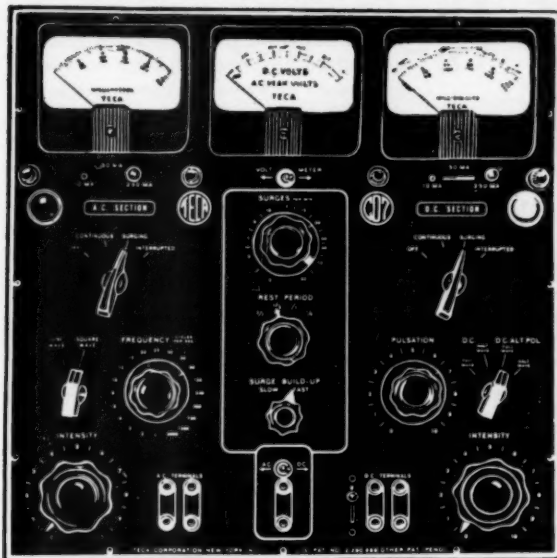
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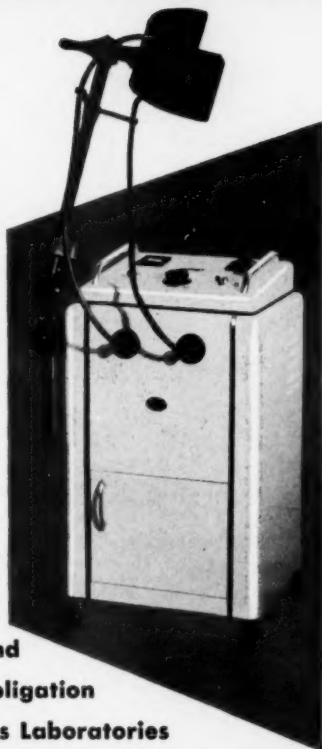
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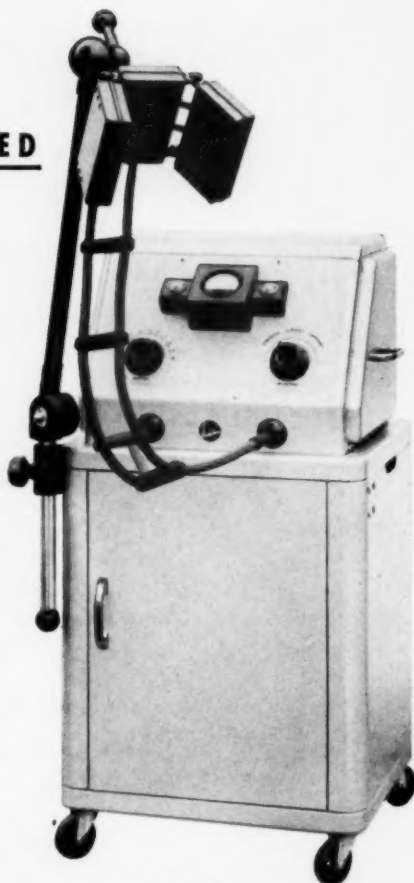
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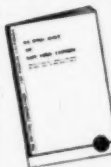
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